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Abstract

This volume examines the background and characteristics of the college union and its buildings, discusses its purposes and the means by which they may be achieved, and considers the impact of these means on the building requirements. General planning principles are developed and applied to the union building and its various areas. The translation of plans into a physical plant as well as into an operating organization is considered, and some concrete illustrations are offered as guides to college union planners. (FS)

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PLANNING A COLLEGE UNION BUILDING

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EDITOR'S INTRODUCTION

This is one of a series of volumes dealing with selected aspects of educational plant planning that are published under the sponsorship of the Institute of Field Studies, Teachers College, Columbia University. The several volumes are reports of individual research projects undertaken by graduate students at Teachers College as part of their programs of studies leading to the Doctor of Education degree. The respective authors are men who have had experience in the areas of which they write, and their intensive studies of these areas should give readers new ideas and suggestions for improved planning of specialized educational plants.

This volume, prepared by Dr. Chester A. Berry under the direction of Dr. Harry A. Scott, Professor Emeritus of Health and Physical Education at Teachers College, Columbia University, deals primarily with the planning of student union buildings in colleges and universities. As Director of Student Activities at the University of Rhode Island over a period of thirteen years before taking over his present position at Stanford University, Dr. Berry had a unique opportunity to become intimately acquainted with the many aspects of student union programs and desired facilities. This project merits serious study by college officials and architects faced with the problem of planning a student union building.

Henry H. Linn

AUTHOR'S PREFACE

In 1957 there were at least 250 college union buildings in the United States and Canada. In that year the oldest of these, the University of Pennsylvania's Houston Hall, celebrated its sixtieth anniversary. Thus, the union building is a relatively new structure. Its appearance on many campuses dates from the end of World War II. In 1947 over one hundred colleges were contemplating union buildings and the Association of College Unions that year devoted nearly all of its convention program to the planning of college union buildings. The United States Office of Education found in 1949 that the greatest need for non-residential college building expansion existed in the union area, and in 1955 the federal government recognized the need for more union space by authorizing federal loans for the construction of union buildings. The quarterly bulletin of the Association of College Unions maintains a section entitled "News on the Building Front," and nearly every issue lists new building projects or sizable expansion of existing buildings. The Association has published a manual on Planning and Operating College Union Buildings, offers a consulting service, and has appointed an architectural advisor. All of the foregoing, combined with the unprecedented increase in college enrollment expected in the years immediately ahead, gives some indication of the growth which this relatively new phenomenon, the college union, has experienced and will continue to experience.

In general, the approach used in this volume is that of an administrator rather than a building expert. An attempt is made herein to examine the background and the characteristics of the college union and its building, to discuss its purposes and the means by which they may be achieved, and the impact of these means on the building requirements. General planning principles are evolved and applied to the union building and its various areas. The translation of plans into a physical plant as well as into an operating organization is considered, and some concrete illustrations are offered as guides to union planners.

This volume is intended to assist college planners in their approach to the problem of planning a union building, but it is hoped that architects, designers and other technicial persons will find it helpful as they approach the task of planning a structure as unique as this one is.

Permission for the fourth printing of this venerable volume was given with considerable reluctance. Those who have urged its reissue do so because they believe that it still has value despite the obvious need for revision, a process for which no time is now available.

C. A. B.

This document contains detailed diagrams and floor plans which because of their size may not show up well in reproduced form. We feel the total document to be of sufficient importance to reproduce in spite of this deficiency.

TABLE OF CONTENTS

Chapter Page

I The College Union 1

Brief History of the Union Movement 1
  Debate and Club Era 1
  College Sponsored 2
  Shift in Concept 3
  Community Center Era 4
  World War II Period 5
  Status at Mid-Century 6

The Role of the College Union 6
  Purpose 6
  Service Aspect 8

Purposes of a College Union and Their Educational Implications 8
  Teaching Mission 8
  Service Mission 9

Nature of a College Union 10
  Organization 10
  Building 10
  Typically American 11

Methods Used in Fulfilling Purposes (Program) 12
  Education for Recreation 12
  Core-Activity Program 12
  Objectives of Self-Realization 13
  Objectives of Human Relationship 14
  Objectives of Economic Efficiency 15
  Objectives of Civic Responsibility 15

Relation Between Methods and Building Requirements 17
  Continuing Functions 17
  Union Atmosphere 17

II General Principles Basic to Planning 23

Organizational Planning 23
  Quality of Decisions Affected by Group Judgments 23
  Consideration of Community Resources 23
  Initial Steps to Planning 24
  More Efficient Use of the Expert and the Specialist 27
  More Effective Interpretation of the Union to the Campus 28

Chapter Page

Organizational Planning (continued)
  Better Adaptation of the Building to Campus Needs 29
  More Effective Expression of the Union Philosophy 32

Expansibility 33
  Demand for Expansion 33
  Space Requirements 33
  Expansion in Kind 34
  Service Facilities 34
  New Facilities 34

Flexibility 35
  Single Purpose Areas 35
  Permanent Space Allocation 35
  Fluctuating Use 36
  Structural Requirements 36

Safety 37
  Structural Aspects 38
  Lighting 38
  Sanitation 39
  Sound Control 39
  Employees' Safety 39
  Healthful Atmosphere 40

Appearance 40
  Architectural Style 40
  Interior 41

Functionality 41

Efficiency and Economy 42
  Homogeneous Grouping 42
  Transportation 43
  Convenience 43
  Maintenance 43

III Application of Principles 44

Facilities and Activities 44

Administrative, Service and Maintenance Areas 50
  Offices 51
  Coatrooms 55
  Information Center 57
  Non-Union Offices 58
  Ticket Booth 58
  Public Telephones 59
  Western Union 60

Chapter Page

Administrative, Service and Maintenance Areas (continued)

Rest Rooms 60
Duplicating Facilities 63
Lost and Found 64
Bulletin Boards 64
Lobby 65
Delivery Area 66
Trash and Garbage Rooms 67
Storage 68
Janitors' Closets 71
Upholstery and Maintenance Shops 72
Elevators 72
Intercommunication 73
Barber Shop 74

Food Areas 74
Functionality 74
Safety 81
Appearance 83
Expansibility 83
Flexibility 83
Organizational Planning 84
Food Area Components 85

Quiet Areas 99
Meeting Rooms 100
Lounges 102
Reading Rooms 106
Music Rooms 108
Art Display Rooms 111
Commuters' Areas 113
Guest Rooms 114
Student Activities Area 116
Non-Union Student Facilities 118

Theatre 122
Need 122
Auditorium 123
Stage 125
Lighting 127
Control Board 128
Light Booth 128
Dressing Rooms 129
Scenery Shop 129
Costume Shop 130
Rehearsal Rooms 130
Projection Booth 130
Sound System 131
Lobby and Foyer 132
Ticket Booths 134

Chapter Page

- Theatre (continued)
  - Coat and Rest Rooms 134
  - Green Room 134
  - Planning Committee 135
  - The Integrated Theatre 135

- Arts and Crafts Shops 138
  - Office-Issue Room 140
  - Storeroom 140
  - Central Studio 141
  - General Shop 142
  - Metal Shop 147
  - Power Tool Shop 148
  - Photography Shop 149
  - Graphic Arts 150
  - Integration of Shops 152

- Games 155
  - Expansibility 155
  - Flexibility 155
  - Safety 155
  - Appearance 156
  - Economy and Efficiency 156
  - Control Center 157
  - Table Tennis Room 159
  - Card Room 161
  - Billiard Room 162
  - Chess Room 164
  - Bowling Alleys 165

- Outdoor Areas 167
  - Parking Space 167
  - Cement Slab 169
  - Outdoor Games 172
  - Sun Decks 177
  - Picnic Areas 177
  - Integration of Outdoor Areas 177

- Miscellaneous Areas 179
  - Ballroom 179
  - Television Room 181
  - Outing Organization Room 183

- Integration of Areas 183
  - Segregation by Function 183
  - Public Spaces 184
  - Reception Center 184
  - Administrative Spaces 184
  - Quiet Areas 185
  - Key System 185

Chapter Page

IV Translation of Planning 187

Architectural Services 187
  Consultants 187
  Selection of Architect 188
  Preliminary Drawings 188
  Assignment of Authority 188
  Site 189
  Working Drawings 189
  Bidding 190
  Supervision of Construction 190
  Special Services 190
  Field Changes 191
  Payments 191

Equipment 191
  Specifications 192
  Bids 192
  Delivery 192
  Installation 193
  Receipt 194

Initiation of Operation 194
  Early Direction 195
  Staff 196
  Maintenance 197
  Supplies 197
  Policies 198

V Guides for Union Building Planning 199

Common Planning Errors 199
Suggested Check List for Union Building Planners 201

CHAPTER I

THE COLLEGE UNION

BRIEF HISTORY OF THE UNION MOVEMENT

Debate and Club Era

Free thought and free speech, cornerstones of freedom in the democratic world, were responsible for the rise of the college union movement. In the early nineteenth century small groups of students in England, passionately devoted to the discussions of their college debating societies but hampered by their inability to extend beyond the limitations of these college (as opposed to university) organizations, formed societies which afforded opportunities for debate on the university level. The first society, formed at Cambridge University in 1815, was known as the Cambridge Union and held its initial debate on February twentieth of that year. The Cambridge Union existed "to encourage debating activities, hold debates without disturbances from other students and to give more liberty and freedom to the discussions." Among the members of this union were Henry Bickersteth (Lord Langdale), Sir Edward Hall Alderson and Sir Jonathan Frederick Polock, both later Barons of the Exchequer, an indication that the union, like its university, was not a democratic organization with a diverse membership. The Cambridge Union met in a "low, ill-ventilated, ill-lit gallery at the back of the Red Lion Inn, a cavernous-tavernous something between a commercial room and a district branch meeting house." In 1817 the university forbade debates with little apparent effect and permission was regained in 1821 with the union continuing to grow in strength from then on.

At Oxford the debate club idea blossomed into reality in 1823 when the United Debating Society was formed. Two years later this group dissolved to be reconstituted on December third, 1823, as the Oxford Union Society and held its first public meeting "in one of the low-framed rooms of Christ Church." Debate on public questions drew increasingly larger audiences with the result that reading rooms were established in 1826 for early arrivers. Discussions following the debates led to a lunch room, then billiards, smoking and conference facilities until many of the appurtenances of club life were accepted as necessary and desirable. Rented quarters were no longer satisfactory and a new building was secured in 1852 to which, a year later, a large debating hall was added. By 1863 smoking and writing rooms were added in another new wing. In 1829 the two unions debated The Comparative Merit of Byron and Shelley, which event led to the extensions of mutual membership privileges.[1]

These debating societies of men's universities maintained their ideals of intellectual achievement and exclusiveness. The Oxford Union was "not frequented of course by the mere spendthrifts and rowdies, nor by the mere students, but was a center for men of varied gifts and tastes ...and the talents of many men of subsequent distinction were brought to light." [1] Today's coeducational unions with their varied programs, many of them catering to thousands of students each year, seem a far cry from their progenitors and yet much is owed to the trailblazers of England. According to Humphreys, "the dignity of the union idea plus the social prestige of the members demanded surroundings of refinement" and the architect of the Oxford Union was instructed to design a building that should be "very special," a commission which resulted in a handsome building well-suited to the needs of a debating club with social requirements. Frescoes were painted on the walls by the then popular pre-Raphaelite artists Rossetti, Morris and Burne-Jones, these paintings lending a tone to the physical surroundings of the union. The beauty of the Oxford union building early set high ideals for union buildings, ideals which, by and large, continue to exist today.

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[1] J. E. Walters, "The University Union," Report of the Sixth Annual Convention of the Association of College and University Unions (1925), pp. 10-14.

The union idea spread beyond the boundaries of England. The Harvard Union, founded in 1832, like the English unions was devoted to debating, philosophy, politics and good manners. It ceased to function in 1839 and was revived in 1880. In 1890 at Rensselaer Polytechnic Institute the students organized a union to promote "the best interests of the institution in both athletics and social life." [2] At this time the University of Glasgow union was in the formative stage and in 1899 it erected its building. A non-resident university, Glasgow recognized the need for something beyond a debating group and emphasized the club facilities -- dining and meeting -- over the debating facilities. Up to this point college unions were independent of their institutions but in 1896 the University of Pennsylvania, inspired largely by its campus Y. M. C. A., erected Houston Hall and administered its operation as an integral part of the institution. Debating had little place in Houston Hall, where such facilities as a swimming pool, bowling alley, gymnasium, billiards and chess tables, reading, writing and meeting rooms, dining areas, an auditorium, offices, and darkroom were included. Student self-government was established to set operating policies through the House Committee and Houston Hall, except for its restriction to male membership, was well on its way towards the modern concept of a college union.

By 1901 the philosophy of the Harvard Union had changed so that the building which it completed in that year was devoted primarily to the ideals of social development rather than debate. By 1931 Harvard had developed its House Plan whereby many of the social and recreational aims of the union were met in the residence buildings and the Harvard Union then became the Freshman Union. Thus at Harvard, scene of the first organized college union in the United States, the unifying force of an all-college union was felt for only a short while. The Harvard Union functioned throughout its career as a private club and never achieved the full educational purposes of a college union as they are understood today.

College Sponsored

With the establishment of Houston Hall as an administrative responsibility of the institution, the college union picture in the United States changed. In 1903 a grant from the Rockefeller family made possible the erection of a union building on the Brown University campus known as Rockefeller Hall. At the University of Michigan, the union founded in 1906 started construction of a building in 1916 which at dedication time in 1920 was considered by many as being ridiculously large and yet, four years later, was too small. Union organizations existed at the University of Illinois, University of Wisconsin and at Ohio State University by 1909, and in 1910 Ohio received a $75,000 appropriation from the state legislature for the construction of a building which was opened in 1911. A quarterly fee of one dollar was assessed at Ohio against all men students. The First Annual Conference of the National Association of Student Unions was held in December, 1914 at the Ohio Union and was attended by representatives from the Universities of Michigan, Indiana, Illinois, Wisconsin, West Virginia, Purdue and Ohio State Universities, Oberlin College and the Case School of Applied Science.[1]

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[1] Edith O. Humphreys, College Unions, A Handbook on College Community Centers (Ithaca, New York: The Association of College Unions, 1946), p. 12.

[2] The Bulletin of the Association of College Unions, XV (May, 1947), p. 6.

Shift in Concept

Headquarters often were established and rented temporary structures, and at the University of Illinois the campus Y.M.C.A. building was purchased in 1923 as a union building. Unions were now established on college campuses, not only as instruments of recreation and diversion, but also as integral parts of the college itself. Their memberships were restricted to men although such women's colleges as Radcliffe, Pembroke, Barnard and Mt. Holyoke contained buildings which served many of the purposes of union buildings. Women guests were admitted upon special occasions to men's unions but, even on such coeducational campuses as Ohio State University and the University of Michigan, participation in the conduct of the unions was not open to women. In 1925, however, new unions at Cornell, University of Iowa, Michigan State College and Vanderbilt University were open to all students, regardless of sex, and the modern phase of college unions was well under way. In 1896 Houston Hall, according to the University of Pennsylvania Catalog of that year, existed "to provide for all the students of the various departments a place where all may meet on common ground; and to furnish them with every available facility for passing their leisure hours in harmless recreation and amusement."[2] How different was the concept a quarter of a century later when, at the dedication of Willard Straight Hall at Cornell, Mrs. Leonard K. Elmhurst stated

> It is our hope that Willard Straight Hall may play a part in cementing really great friendships -- friendships between men and women, between faculty and students, between men of all groups, races and nationalities...
>
> Perhaps it will be possible for the students here to hammer out their social faiths, their religious creeds, their philosophies, their political beliefs, their own roads to freedom. We trust those faiths and fears, those hopes and doubts, may be built into the very bone and structure of this building.
>
> So because human relationships opened new worlds to Willard Straight, it is our hope that the Union may in some measure recreate life in these terms for others. In that faith we present the building to the University, to be guided and governed by the students, and made by them through their own adventures of spirit here into an instrument for the illumination and enhancement of personal and social living.[3]

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[1] The Bulletin of the Association of College Unions, XIX (October, 1951), p. 1.

[2] Humphreys, *op. cit.*, p. 20.

[3] Willard Straight Hall, a pamphlet issued on the occasion of the twenty-fifth anniversary of that union building (December, 1950), p. 1.

Community Center Era

From the spending of time "in harmless recreation and amusement" to the "illumination and enhancement of personal and social living" is the step from the negative to the positive concept of the college union. From an exclusive men's debating club to a coeducational, self-governing, social, cultural and recreational organization is a considerable stride, yet it represents the change from the Harvard Union to those of 1925. From that date (1925) on, the progress in unions occurred largely in the areas of professional leadership and student participation in such leadership. By 1937 approximately 75 per cent of all unions were coeducational.[1] The early pace-setting of east-coast institutions had been lost to the mid-west where, following the lead of the University of Michigan, Iowa State College (1928), Indiana University (1932), University of Kansas (1927), Kenyon College (1929), and Wisconsin (1928) opened new and imposing buildings.

Michigan State Normal College was the first teachers college to erect a union and others quickly followed suit. During the decade between 1930 and 1940 the number of union buildings more than doubled (from 65 to 145).[2] The overwhelming majority of these unions were integrated with the institution's administration although on occasion -- Iowa State College, for example -- they were entirely independent of it. The larger union buildings had become great service centers as well as educational and recreational instruments. In 1935 it was considered desirable by union directors for a complete union building to contain the following facilities:

Alumni Offices
Art Room
Union Administrative Offices
Cafeteria
Committee and Conference Rooms
Cigar, Candy and News Counters
Cooperative Student Store
Dining Room
Ball Room
Faculty Room
Game Rooms (cards, checkers, chess)
Offices for student organizations
Branch Post Office
Reception Room
Radio Broadcasting Room
Soda Fountain
Shoe Shining Stand
Theatre
Washroom
Banquet Rooms
Bowling Alleys
Barber and Beauty Shops
Hotel Rooms
Information and Employment Bureau
Library
Locker and Check Rooms

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[1] The Bulletin of the Association of College Unions, V (December, 1937), p. 1.

[2] Humphreys, op. cit., p. 29.

General Lounge Room
Men's and Women's Lounges
Magazine and Newspaper Room
Music Room
Pool and Billiards Room
Reading Room
Rest Rooms
Smoking Room
Writing Room
Tailor Shop
Swimming Pool[1]

This list of thirty-seven items combines most of the facilities of a large hotel with those of a private club. Compared with a similar survey of union directors conducted by the University of Ohio in 1948, it differed basically but little from the first study, the later survey finding beauty shops and washrooms (shower rooms) undesirable, and adding garage facilities, handicraft shops, lost and found departments, lounge terraces, study rooms, telephone centers, travel centers, trophy rooms and telegraph offices.[2] Actually, of course, these surveys have no direct application to any specific institution since they neglect such consideration as size, location, type (coeducational or not) and existing facilities but they are valuable in so far as they tend to indicate the thinking of persons responsible for the union operation. A comparison of the two surveys leads to the conclusion that the overall physical requirements of union buildings have changed but little during the past two decades, a conclusion confirmed by a survey conducted by the Association of College Unions in 1951.

By 1940 the inclusion of rather elaborate social and recreational facilities in dormitories gave evidence that the need for campus leisure-time activities was widely accepted and also presented a challenge to the union movement. The divisive possibilities of such residential facilities, as opposed to the unifying role of the union, remain one of the more important problems of those in the union field.

World War II Period

World War II postponed consideration of all such problems in favor of the more immediate ones such as furnishing recreation to military trainees, operating under reduced budgets or catering to largely feminine clientele. The G. I. boom which followed the war wrought further changes on unions. Some became classroom buildings, others largely food commons. The huge crowds which visited the union buildings nearly swamped them and their staffs. Temporary structures and branch unions sprung up and the provision of abnormal functions was the rule rather than the exception. There was concern that the widespread tendency to use the union building for non-union functions indicated a lack of appreciation of the union's real value.

Nevertheless, the place of the union in campus living generally was accepted as evidenced by the nearly universal demand for more union facilities. From 145 buildings in 1945, the total rose to 209 by 1951, with 17 more under construction and 46 more being planned.[1] Many more plants were remodeled and multi-million dollar union edifices, some in excess of $4, 000, 000, arose across the nation. State legislatures appropriated funds for unions in some instances.

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[1] "Desirable Activities For a Complete Union," Report of the Proceedings of the Seventeenth Annual Convention of the Association of College Unions (1935), p. 17.

[2] Frederick Stecker, in a form letter from Ohio State University, Columbus, Ohio, to all survey participants, January 6, 1958.

Status at Mid-Century

The evolution of college unions is clear up to the present but their current status is difficult to determine. The original debating stage has long since passed, the club union is on the wane, coeducational campuses with unions nearly all have coeducational unions. Common characteristics of unions are apt to be superficial. Their publications and the catalogues of their colleges are almost unanimous in expressing their educational importance and yet the philosophies which guide them differ markedly. The usurpation of many union facilities and functions during the post World War II, a symptom of the failure of unions to secure their place in higher education, was to some extent due to the lack of educational leadership they received. A collection of facilities does not assure a program which is educationally sound and it is on this basis that gauging the state of today's unions becomes nearly impossible. The philosophies which college and union administrators breathe into their facilities are determining their educational effectiveness. An ex-president of the Association of College Unions, deploring the failure of some institutions to utilize their unions properly, says "I am sorry to say that I think there will be more rather than less tendency in the future for University officials to put pressure on the financial rather than the personnel considerations in the direction of college unions."[2] Some unions are directed by hotel managers, others by promoted bookstore managers, others by persons trained on the job. More and more persons educated in the field of guidance and personnel and recreation are registering with the Association's employment agency and so are graduates of hotel management courses. Whether union policies will be determined eventually by professionally prepared educators or fiscally minded business operators is a moot question. It would appear that the type of building and its finance plan will do much to settle the problem on each individual campus. The ideal solution, of course, would be the appearance of more union directors who can encompass both the educational and financial aspects of the field. In the final analysis it will be the top college administrators who, realizing the full educational potentialities of their unions, will demand the same type of leadership from their directors that they do from their faculties. It is hoped that the ominous warning that the union can, and sometimes does, provide experiences leading to the direct opposite of the learning which it considers desirable will be heeded during the critical years ahead.

THE ROLE OF THE COLLEGE UNION

Purpose

The statement of purpose of a college union, adopted by the general membership at the 1956 conference of the Association of College Unions, reads:

1. The union is the community center of the college, for all the members of the college family -- students, faculty, administration, alumni and guests. It is not just a building; it is also an organization and a program. Together they represent a well-considered plan for the community life of the college.

---

[1] Porter Butts, "Report of the Editor for Publications for 1950-51," College Unions - 1951. Report of Proceedings of the Twenty-eighth Annual Convention of the Association of College Unions (Ithaca, New York: The Association of College Unions, 1951), p. 80.

[2] Donovan Lancaster, "Contributions of the Student Union to the Total Personnel Program," Educational and Psychological Measurement, X (Autumn, 1950), p. 586.

2. As the "living room" or the "hearthstone" of the college, the union provides for the services, conveniences, and amenities the members of the college family need in their daily life on the campus and for getting to know and understand one another through informal association outside the classroom.

3. The union is part of the educational program of the college.

   As the center of college community life, it serves as a laboratory of citizenship, training students in social responsibility and for leadership in our democracy.

   Through its various boards, committees, and staff, it provides a cultural, social and recreational program, aiming to make free time activity a cooperative factor with study in education.

   In all its processes it encourages self-directed activity, giving maximum opportunity for self-realization and for growth in individual social competency and group effectiveness. Its goal is the development of persons as well as intellects.

4. The union serves as a unifying force in the life of the college, cultivating enduring regard for and loyalty to the college.[1]

Implementation of this statement in everyday practice is as varied as the institutions operating unions. The functioning of the organization, usually carried on by representatives of students, faculty, and alumni, may reflect a democratic philosophy which permits the representatives to operate the union with nearly complete autonomy or it may disclose a point of view in which all policies and decisions are arrived at and executed in unilateral fashion by one or more members of the institution's administrative hierarchy. Both extremes exist with most unions operating somewhere between them. The representatives of the organization -- usually known as the union governing board or by some similar title -- may be equally divided among students, faculty and alumni or they may be chosen preponderantly from one or two of the three. The informal education which can be obtained through the organization may or may not be recognized or considered important. Deliberate effort to obtain the most and best education through its medium may or may not exist and actual efforts to lessen its educational impact may be encountered. The breadth of the program may run from two to one hundred and forty-nine activities,[2] with much of its scope being determined by the building which houses the union and by the professional leadership which guides it. Membership in the organization usually includes all members of the student body, each of whom automatically pays a union fee or tax, although there are some institutions which do not compel membership in the union, such membership and subsequent payment of dues being voluntary. Some institutions do not levy direct fees, supporting their unions instead through the usual institutional budgetary procedures (Brown University, for example). Life memberships are available to alumni and staff members through payment of regularly established fees (Iowa State College, for example), and in at least one university (Illinois) the institution has subsidized its union by paying for a membership in it for each of its faculty members. The prevailing pattern, however, is one in which compulsory membership and fees payment are used.

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[1] "The Role of The College Union," Report of Proceedings of the Thirty-Third Convention of the Association of College Unions (Ithaca, New York: The Association of College Unions, 1956), p. 113.

[2] Andrew G. Wolf, "Basic Designs For College Union Activity Programs," College Unions 1952. Report of Proceedings of the Twenty-ninth Annual Conference of the Association of College Unions (1952), p. 17.

It is quite apparent, then, that any statement of the role of college unions must be a general one but that the definition of a certain college union can be more specific since it can take into consideration local needs, facilities, resources, and traditions. This specific definition might well use the quoted statement as a point of departure to assure the establishment of something more than a community service station in which guests are housed, people fed, souvenirs sold, conventions assembled and cash registers jingled.

Service Aspect

Examination of desirable union facilities reveals that "services, conveniences and amenities" may include barber and beauty shops, cafeteria, cigar and news counters, stores, post offices, shoeshine stands, hotel rooms, tailor shops, telephone and telegraph centers. Few primary educational opportunities are inherent in such services, although distinct secondary possibilities do exist in the employment of student labor under proper supervision. Realistically, then, the inclusion of some rather irrelevant services may be anticipated in most union structures since it appears that to some degree the housing of such facilities has prompted the erection of union buildings. The extent to which such services attract persons to the building may determine the effectiveness with which the union program reaches different segments of the campus community, and the revenue furnished by these services may assist materially in the support of an effective program and an efficient plant. Awareness of the commercial aspects of union buildings can assure proper attention to them just as awareness of the educational and recreational aspects of a union can assure the planning of facilities which will result in the kind of education and recreation desired.

PURPOSES OF A COLLEGE UNION AND THEIR EDUCATIONAL IMPLICATIONS

The terms cultural, social and recreational, used to describe the union program, are largely mutually inclusive. The interchange between students in lounges or game rooms or at dances is both social and recreational. Discussion groups and music hours can be cultural and recreational, and planning an art exhibit both social and cultural. To permit a rough differentiation of the terms, the following statement is offered. The word *social* refers to relations with people, *cultural* to the refinements of the way of life of these people and *recreational* to the expenditure of leisure time of these people. For fuller meaning, consideration of their educational implications is indicated.

Teaching Mission

If the purposes of college unions are educational they should be consistent with those of all education. In 1938 the Educational Policies Commission promulgated the purposes of American education and in 1945 approved republication of the essentials of the original. The Purposes of Education in American Democracy lists four groups of objectives of education--self-realization, human relationship, economic efficiency and civic responsibility[1]--and breaks each group into components. A college union serves to fulfill in part nearly all the objectives listed but can function most effectively in those areas for which it is designed. Such areas and their components include:

- Objectives of Self-Realization
  - Recreation
  - Intellectual Interests
  - Esthetic Interests
  - Character

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[1] Educational Policies Commission, *Policies for Education in American Democracy* (Washington: National Education Association, 1946), p. 189.

Objectives of Human Relationships
  Respect for Humanity
  Friendships
  Cooperation
  Courtesy

Objectives of Economic Efficiency
  Work
  Occupational Appreciation

Objectives of Civic Responsibility
  Social Activity
  Social Understanding
  Tolerance
  Political Citizenship
  Devotion to Democracy[1]

The educational implications of the purposes of a college union are considerable. They attest to the necessity of skilled professional leadership, particularly in light of the voluntary nature of the union's operation. Since attendance at the various union events, unlike the classroom, is not required, the quality of the teaching must be of the highest order to reach successfully the large number of students it serves. In a speech concerning the college union as an educational medium, Harold C. Hand mentioned twenty-one learnings afforded by the college union social program and proceeded to point out that these learnings

> . . . will materialize only if and when the corporate life of the college union is so conceived, so organized, so administered, and so supervised or guided, that the types of student experiences productive of said learnings are provided -- and the contrarily oriented student experiences prevented from happening.... The precise opposites of all the desirable learnings noted will be acquired if the student experiences provided are of the wrong instead of the right type -- which, regrettably, they sometimes are.[2]

The purposes of education which a college union can best fulfill are met not by accident but by purposeful planning and execution. In this respect, then, the college union as an educational instrumentality scarcely differs from that of the history department or the physics laboratory. It teaches because it attempts to teach.

Service Mission

The secondary purpose of the college union, that of service, need not and should not be distinct from the educational purpose, but the duration of operating hours and financial complexities of most services -- food, checking, information, bookstore, barber shop, for example -- place much of this area outside the realm of primary education. This does not mean, however, that a number of learning opportunities do not exist. While students will seldom possess the knowledge, experience, viewpoint, local background or time to permit them to enter in detail into the operation of the union plant, its service departments or its personnel program, they can and should contribute to the establishment of overall policies. Their participation can serve to keep the staff attuned to the thinking of its clientele while interpreting the problems of various areas to the students. The ultimate responsibility must rest with the professional and business staff. Nevertheless, the opportunities for realistic education which exist in the business operations of the union must not be dismissed.

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[1] Ibid., pp. 192, 212, 226, 240.

[2] Harold C. Hand, "The College Union: An Instrumentality in the Informal Curriculum," College Unions - 1947. Report of Proceedings of the Twenty-fourth Annual Convention of the Association of College Unions (Ithaca, New York: The Association of College Unions, 1947), pp. 72, 73.

NATURE OF A COLLEGE UNION

Organization

Since by definition the term college union has two meanings -- organization and building -- it is necessary to investigate the nature of each. The organization of students, faculty and alumni which composes the union usually operates with a governing board at its head. This board, which may or may not include representatives of the three groups, is responsible for the operation of the union, although much of the detail is handled by trained staff members and much of the guiding philosophy is originally that of the professional staff. (The variety of situations existing throughout the United States make almost any generalizations on unions questionable and so the description of the nature of college unions which follows may not apply in whole on any specific campus. Much of it, however, is true if the campus does in fact have a real union.) The method of determining the composition of the board is not particularly relevant here and it should suffice to say that the board usually represents all three groups concerned -- students, faculty and alumni -- with the faculty (or administration) representation including the assumption of responsibility to the president of the institution. The board itself is concerned largely with questions of policy and implements its policies through the work of various volunteer committees and the paid staff of the union.

The committees consist almost entirely of students and may or may not include members of the governing board. At Michigan State University the following standing committees operate: education, library, merit, outings, publications, publicity, social and tournament. At the University of Nebraska standing committees for 1950-51 included: general entertainment; special activities; convocations and hospitality; music activities; house and office; public relations; recreation; dance; and budgets, orientation and evaluation. Regardless of the titles and varying functions, most of the committees serve as the links which connect the boards with the general campus population. The committees plan and execute programs, attending to such details as scheduling, publicizing, decorating and budgeting. They may choose records for the music library, prints for the art collection. They may help in the orientation of freshmen or study a proposed change in furniture arrangement. They may run the billiards tournament or a book review hour. The committees, sensitive to campus needs and interests, keep the union dynamic, flexible and busy.

Building

The nature of a college union building varies with each structure, whether approached from either the functional or the physical standpoint. Functionally it is a community center of the first order. It may be a library, art gallery, art workshop, theatre, billiard and bowling room, dance center, scene of concerts and forums, informal outing and sports headquarters, office building, hotel, public relations agency, ticket bureau, general campus information bureau, convention headquarters, and post office. The uniqueness of college unions demands custom planning, with the result that, physically, union buildings differ as local situations differ. While the overall purpose of unions remains relatively alike, their functional and structural natures vary. Thus the Student Union of the University of Chicago operates two buildings; Willard Straight Hall at Cornell contains a large dormitory for visiting athletic teams; the University of Toronto's Hart House contains an elaborate athletic plant; the Wisconsin Union houses a complete art and craft center; Minnesota's Coffman Union, an underground garage; and the University of Michigan, a swimming pool. The functions housed by the union building ideally are those needed to make it the focus of the recreational, cultural, social and civic life on the campus. Needless to say, many existing campus facilities such as the library, art museum, gymnasium or theater cannot and should not be duplicated in a new union building but the inclusion of as many such facilities as are feasible is desirable to assure that the widest possible range of educational experiences are made available by the union.

Structurally, of course, the union building must house efficiently the facilities required by the union functions while suggesting its purposes by its appearance and design. Its atmosphere should meet the local requirements. If the union is considered "the living room of the campus" it is logical that it reflect the friendliness and warmth of a living room. If it exists largely to serve as a convention center and hotel it might well offer a more formal environment but, it should be pointed out, such an approach may result in a building and an operation which do not meet the terms of definition of a college union as offered in this study. Whatever the local requirements may be, it seems well to remember that much of the activity of a union is informal in nature and that most of the participation in its activities is carried on by informal college students. The nature of a college union building, then, might well be largely informal to reflect the character of the activities which it houses. Such informality should not be confused with lack of beauty or with untidiness but rather it should lend itself to such attractive design and decoration that it invites participation. The stiffness and aseptic qualities of some of the more palatial union buildings do not seem to indicate the true reason for their existences, although the attractiveness of the ballrooms in such buildings is consonant with the atmosphere which usually is achieved at college dances.

The well-planned union building separates its areas by functions to permit efficient communication, supervision and operation. It does not place bowling areas next to conference rooms or information desks on upper levels. By separating yet coordinating its components it continually offers the opportunity for new experiences, so that the walk from the coffee shop to the games area, for example, may lead students past a music room or by an art exhibit. It literally surrounds those who use it with opportunities and this pervasiveness is a part of the nature of a union.

Typically American

The nature of a college union is distinctly American. It reflects the national philosophy of democracy combined with a high standard of living. The twin centers around which the union revolves are self-government and recreation. The organization of the union itself offers an example of self-government and the building houses the offices and meetings of many of the other campus organizations. The permissive atmosphere thus engendered is nurtured by proper leadership. The recreative aspects of the union, not easily or necessarily separated from its service aspects, offer outlets for the expressive instincts. Flourishing as it does in an unrestrained environment, recreation gives to the union a spontaneity and ease not easily duplicated elsewhere, and at the same time reflects the American patterns of leisure-time activity associated with a high standard of living. The qualities of self-discipline and responsibility fostered by the democratic operation of the union merge with the relaxing and creative influences of the recreational program to make the union simultaneously a place where present needs are being met and future ones anticipated. Adding to this concept of a college union the commercial-service aspects of many unions increases its uniqueness and completes the depiction of its nature, while tending to blur some of the lines of the depiction.

METHODS USED IN FULFILLING PURPOSES (PROGRAM)

The twofold purpose of the union, that of educating while rendering service, is not as unique as it might appear at first thought. Physical education, drama, music, library and agriculture are a few of the other components of the college which are commissioned with such dual purposes and each has its own methods for reaching its ends. The union's educational contribution is unique in that participation in its program is voluntary. Those who use the union facilities do so because they wish to and not, as a rule, because they are seeking academic credit. The challenge to the union under such circumstances is great. The program it offers must be attractive enough to warrant participation yet worthy enough to warrant presentation.

Having established its purpose, the union must decide upon the processes by which it will achieve these purposes. The objectives of self-realization, human relationship, economic efficiency and civic responsibility are, by definition, to be realized through social, cultural and recreational experiences. The function of service is carried out as efficiently as possible by utilizing the best commercial and institutional methods which do not interfere with the primary educative performance of the union. For example, the most efficient and modern methods of food preparation and service should be used in the union building but the hours of food service availability should not be limited only to the most lucrative periods of the day. Thus, while a financially oriented policy might close the kitchen during slow week ends, a policy which recognizes both purposes of a union might require food service at that time. The service aspects of the college union must be regarded, then, largely as means to an educational end and not ends in themselves. The program is the device by which the union's purposes are fulfilled.

Education for Recreation

The steadily increasing time and money which Americans have to devote to leisure are not necessarily spent in a fashion which furthers self-realization, human relationship or civic responsibility. The need for the union to provide programs which meet the current recreational requirement of its students, to furnish guidance in the constructive use of leisure time, to teach skills which will be helpful in later life and to form wholesome attitudes toward recreation has become more and more important. Realizing that recreation is a worthwhile, socially accepted leisure experience of educational significance that provides immediate and inherent satisfaction to the individual who voluntarily participates in an activity, the union staff needs only to consider the means by which it will reach its educational objectives before planning its program.

Core-Activity Program

In 1951 Wolf found that 239 recreational and service activities were sponsored by college unions.[1] Using this list, his own recreational criteria and the evaluation of union directors answering his survey,he derived a core-activity program which is representative of union programs the country over. This core program is divided into ten areas as follows: dance, social, games, art, crafts and hobbies, music, film, discussion, literary, and personnel. While no union must necessarily limit itself to such areas or include all of them to operate successfully as an educational agency, it will be functioning properly if its program is effective in these areas. Therefore, the contributions these areas can make in meeting the objectives of education as set forth in the previous section of this chapter may serve as a guide for a union staff engaged in program planning.

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[1] Andrew G. Wolf, op. cit., pp. 23-28.

Objectives of Self-Realization

Recreation and Intellectual Interests -- Generally, except for such activities as billiards, bowling and table tennis, the area of sports is left to the physical education department but tournaments, leagues, instruction, intercollegiate competition, exhibitions and free play in bridge and other card games, chess and checkers, and billiards, bowling and table tennis are among the methods used by the union to meet these objectives. The various dance programs -- social, folk, square -- on the instruction, exhibition and participation levels, contribute much to the recreational and some to the intellectual objectives, as do such endeavors in the field of crafts and hobbies as photography, ceramics, woodwork, jewelry-making or metalcraft. The utilization of motion pictures can serve either or both objectives, depending upon whether the approach is from entertainment, technical or critical positions, with a combination of all three positions being quite possible. Discussion and literary programs tend to emphasize the intellectual objective over the recreational when presenting forums, informal debates or book reviews, but the availability of newspapers, periodicals or a recreation library may shift the balance back towards recreation.

Esthetic Interests -- Since intellectual experience must bear the esthetic mark, no clear-cut division can be drawn between the intellectual and the esthetic. If esthetic refers to the act of perception and artistic to that of production it is apparent that many of the experiences of the dance, film, literary, and crafts and hobbies programs are esthetic as well as intellectual. The objective of inculcating an appreciation of beauty, while accomplished in large measure through such media as the concerts, record playing, group singing, art and photographic exhibits, art-lending library and instructional opportunities of the art and music programs, also can be achieved in nearly every other phase of the union operation, if only through the manipulation of the physical accouterments.

Character -- The opportunity for self-direction is great in a college union. The permissive atmosphere which pervades the building and dominates its philosophy allows almost complete choice of activity, time and company. At the same time this freedom indicates a need for guidance on the part of the union staff which is most demanding, since the student who devotes his time to the billiard table or soda fountain to the exclusion of his classroom or study desk is quite often encountered in the union situation. Over and above the freedom of choice which exists in the union, there lies the responsibility of developing powers of discrimination in those who participate in the program. A cheapening of standards in any phase of its offerings -- dance, games, films, music, art -- may not only result in failure to forward its educative mission but may produce the precise opposites of all the desirable learnings.

The most direct opportunity the union staff has for dealing with the character aspect of education is in the personnel portion of its program. Here student committees are selected, trained and function. These committes are the volunteer workers who operate the ten areas (more or less) of the core-activity program. Through them the professional leaders of the staff perform many of their functions. With time, the more mature members of these committees operate almost independently, and the union continues to encourage as much responsible self-direction as is commensurate with the boundaries of the whole situation.

While the union director may not assume immediate responsibility for them, a large number of student organizations usually meet in the union building. Naturally, these organizations have educational purposes, although their appeal and stated objectives may be based elsewhere. The opportunity for stimulating self-direction exists within these groups, and the union staff, through faculty advisors, other students or directly, often can assist in the growth of individual members. This is particularly true in instances where headquarters such as yearbook, newspaper and radio station offices are established within the union building.

Objectives of Human Relationship

Respect for Humanity -- Consideration for the well-being of others is a mark of the educated person,and the term "union" connotes much which deals with the well-being of others. Mere organization indicates a reciprocity of interest as distinguished from self-interest. The ideal of service permeates the idea of committees as included in the personnel area of the activity program. A student who arranges a billiards tournament illustrates to those who compete his consideration of others. The campus artist whose work adorns a lounge wall or the leader of a panel group does the same. These examples, multiplied by the number of times they and their counterparts appear, coupled with a friendly, understanding approach by the whole union organization, bring meaning to the idea of respect for others and their prerogatives.

Friendships -- As a community center, the union building is the gathering place of its community. The proximity of many people with similar interests indulging in similar activities makes for friendships which cut across the lines established by fraternities or sororities, dormitories or classes, religion or sex. The atmosphere created by so many working and playing together is conducive to the making of friends. The dance programs, the open house or coffee hour of the social committee, the opponent across the chess table, or a mutual liking for Bach, offer opportunity for the creation of friendships seldom duplicated in adult life. The bringing together of people accomplished by any of the activity programs can result in the development of friendships through which the educated person enjoys a rich, sincere and varied social life. More important than the establishment of possible lasting friendships is the establishment of the ability to make friends, of knowing the need for them and of recognizing the opportunity to make them. The use of facilities such as refreshment areas, meeting rooms, lounges or game rooms provides opportunities for the making of friendships. Programs designed to expand the utilization of these facilities assist in the achieving of this objective.

Cooperation -- Like the objective of respect for humanity, the ideal of cooperation is instilled through the ideal of service. A controlled appeal to the drive for ego-satisfaction of those working on the planning level can do much to make these people effective, not only in cooperating with their fellows, but in creating an atmosphere of cooperation throughout the union organization and building. Receptions and teas with student hosts and hostesses, orientation periods for new students, student instruction and assistance in games, art, crafts and hobbies areas, as well as participation in campus-wide, non-union events, are some of the methods by which cooperation is taught. In the game areas, traditionally and inherently, competitive stress should be placed on participation rather than victory at all costs.

Courtesy -- Observation of the amenities of social behavior occupies an important position in the education of college youth. Commercial publications are devoted wholly to the subject, and many colleges themselves produce pamphlets to assist their students in rounding off their rough corners. Not only do the more obvious devices of social dances, receptions, teas, parties and banquets lend themselves to the teaching of courtesy, but the day-to-day routine of table manners, removal of hats, use of ash trays, waste receptacles and cloak rooms, proper use of footstools and chair arms, behavior in game rooms and myriad other happenings offer opportunities for the exercise of courtesy. A positive and continuing effort in this direction can produce results. Since many of the manifestations of courtesy and discourtesy are symptoms of more important things, an alert staff often can utilize the behavior exhibited in the union building as a means to better understand and assist its patrons.

Objectives of Economic Efficiency

Work -- While many of the educational objectives served by the college union are done through the medium of volunteer work, there remain many aspects of the union operation, largely in the service and commercial areas, which require paid workers to insure efficient operation. On the professional and skilled levels full-time employees are needed to ensure the knowledge, stability, competence and experience required in any complex organization. However, many opportunities do exist for the employment of students on a part-time basis, enabling them to earn much of the money necessary for the completion of their education while learning "the satisfaction of good workmanship." Many of the menial tasks can be fulfilled by student help and, with proper selection and training, students can be given posts of higher authority with commensurate raises in compensation. As the use of student employees entails a constant turnover of personnel through graduation and other usual means of loss, such as academic failures, financial reverses, marriage, or entrance into the armed forces, a continuing training program is needed to ensure the availability of help. The relatively low wage paid to students does not result in any marked economies since the training program is fairly expensive and the short between-class working span, duplication of time during the frequent changes of shifts, lack of continuity in workers carrying out specific jobs and periodic pressure of special occasions such as examinations or athletic events make for inefficiency. However, the work experience and financial assistance provided do much to meet the objective of economic efficiency, and students represent a fluctuating labor pool which varies with the demand for services, being present during the academic year and absent during vacation periods. It should be pointed out that the size and type of college union building and program, the attitude of local labor unions and the economic backgrounds of the student body are among the diverse elements which may affect the utilization of student help. In many institutions work may be furnished on a volunteer basis, while others may find it necessary to pay for such work, but the satisfactions accruing from good workmanship may be the same in either instance.

Occupational Appreciation -- In a democratically functioning organism such as a college union, the value of an individual's work is quickly ascertained by one's fellows. The student at the information center attends classes with those who ask him questions, the soda fountain girl lives in the same dormitory with those she serves and the janitor may be the president of his fraternity. Student workers can discuss their working problems with their peers and these problems, diffusely perhaps, become common knowledge. Workers who become perfunctory in commission of their duties are subject to pressure not only from their supervisors but their fellow students. Such constant interaction serves to impress on both the worker and the patron the social value of work.

Objectives of Civic Responsibility

Social Activity -- The correction of unsatisfactory conditions is predicated upon the determination of these conditions and since the college union building acts as the center of campus activity, many of the unsatisfactory conditions of the college and of all society are discussed here. With a constantly changing student body certain conditions are apt to be listed recurringly as unsatisfactory when investigation into the facts may reveal otherwise. Maintenance of central files, a good information center and an alert staff can do much in teaching students to gather as many available facts as possible before acting. With leaders of student governing organizations as well as the members of the union board using the union building as their headquarters, the guidance which the union staff can give towards the amelioration of unsatisfactory conditions in the union, on the campus and elsewhere is considerable. More important, inculcation of the idea and ideal of civic service as a means of correcting wrongs can be one of the union's greatest educational contributions.

Social Understanding -- While much of the effort exerted to enhance the understanding of social structures and social processes must occur in the classrooms, the informal instruction which the program offers through its group activities -- whether they be meetings, dances, coffee hours, receptions, conversations, free play or some other medium -- exists as a sort of laboratory experience in which much of the academic theory is tested. Since the collegiate setting is in many ways an artificial one where individuals are surrounded largely by their contemporaries, care must be taken that the experiences gained do not obliterate the realities of a larger and broader world in which social structures are considerably more complex and the social processes infinitely more involved. The lecture series, debates, forum groups, film showings, book reviews and like programs augment the more informal activities to widen the scope of student perspective and formalize the learnings resulting from such sources as the classroom, the home, the dormitory, the athletic field, the union building, the church and the many places the college student spends his time and energies.

Tolerance -- Recognition of individual differences in such areas as politics, religion, hobbies, music, art or reading scarcely can be avoided in a union building, surrounded as its users are by a multiplicity of diverse happenings. Introduction of a diversity of elements into the union program creates a catholicity which, properly exploited, can do much to destroy the provincialism so apt to grow in the introverted atmosphere of the campus. Respect for the opinions, beliefs and rights of others, reflected from the union board, the campus governing groups, the newspaper and other organizations using the union building as their headquarters and carried out in the day-to-day operation of all phases of the union and its staff, creates an environment in which social understanding and tolerance can flourish.

Political Citizenship -- The pyramidal structure of the union organization is based upon the idea of representation, the broad base of membership being represented by its delegates, usually elected, at the apex. The system which places the various union committes between the top and the bottom of the pyramid makes the union board most sensitive to the demands of its constituents. Such steps as posting of minutes and financial statements, circulation of handbooks or manuals, interviews and newspaper articles serve to engender interest in the union operation. Thus, when elections are held, the desire which should accompany the exercise of the franchise has been fostered. The example thus set should be used to encourage similar endeavors on the part of other organizations. Continued efforts in this direction are important if intelligent and socially minded voting is to be taught at the college level.

Devotion to Democracy -- The complexities of modern society divert the interests of men and women from civic and social questions, making difficult the democratic operation of this society. The weight of many pursuits similarly affect the college student. His academic load, the demands of his fraternity or other living unit, his interest in the opposite sex, or his possible employment, are among the many things which divert his interest in his own campus governing machinery. The failure of many individuals to accept their just responsibilities for the social welfare threatens loyalty to the democratic ideal and it becomes apparent, therefore, that the college must teach social discipline and the acceptance of responsibility for the social welfare. The union must be prepared to combat the diversion of interest from civic and social affairs. It must attempt consciously to encourage in all its endeavors the development of self-discipline, of group interest and personal responsibility. The presentation of its various programs are not sufficient because mere presentation overlooks the myriad opportunities which exist to foster participation on the planning and execution levels. Constant striving to bring more and more persons into the machinery which operates the union and constant pressure on these persons to increase their services and range of responsibilities, combined with sensible appreciation of individual needs and limitations, result in the creation of a laboratory of democracy which is more effective than any academic lesson can ever hope to be.

We find, then, a building which houses facilities whose function it is to meet the objectives of education as they are approached from the viewpoints of self-realization, human relationship, economic efficiency, and civic responsibility. These facilities should offer opportunities for formal, informal, social, and square dancing; for mixers, coffee hours and forums; for instruction in a variety of areas from etiquette and parliamentary procedures to pocket billiards and knitting; for participation in games ranging from chess to bowling, from bridge to table tennis; for art exhibits and crafts work; for music recitals and individual piano playing; for the viewing of documentary motion pictures to the best of Hollywood's products; for the rehearsal of a one-act play or the presentation of a complete drama; for intercollegiate debates or informal discussions; for a reception and tea or a between-class cup of coffee; for a book review talk or a glance at the latest periodical; for numerous committee meetings and interviews with single students. The two hundred and thirty-nine activities listed by Wolf are neither all-inclusive nor all-necessary since each college union is of itself unique but his core-activity program listing, distilled as it is from unions throughout the nation, is an excellent guide and departure point for union planners.

RELATION BETWEEN METHODS AND BUILDING REQUIREMENTS

Continuing Functions

The ten areas of the core-activity program are dance, social, games, art, crafts and hobbies, music, film, discussion, literary, and personnel. Beyond these program areas there is the day-to-day, continuing functioning of the union, much of it in its service aspects, that does much to determine the success of the whole program. If the union is to be the center of campus life its utilization must become ingrained. Members of the community should look naturally to the union for the satisfaction of many of their cultural, recreational, social and physical needs. The recent appearance of that American phenomenon, the "coffee break," offers the union food service a preeminent opportunity to cater to all members of the campus. Home-town newspapers easily accessible, a varied library of recordings, a busy crafts shop, a well-run games room, physical education classes receiving academic instruction in bowling -- these are some of the things which are available daily or even hourly and inculcate the union habit. Traffic resulting from them should pass by bulletin boards and displays advertising other happenings. Public-address systems carry notice of coming events. Corridors contain art exhibits; recorded concerts are piped into lounge spaces. In other words, the "union atmosphere" pervades the building and one experience leads to another. The continuing functions of the union -- food service, games, meetings, bookstore, post office, information, offices, lounges, music rooms, galleries -- must not be overlooked or deprecated. In many respects they can be considered as activities, and the informality and spontaneity which accompany these functions have a value often lost in the planned activity program.

Union Atmosphere

The existence of a "union atmosphere" is the result of a number of elements, chief among which is the union staff. This staff, in turn, influences the various committees and, eventually, the student body. The policies of the college or university do much to create a campus climate which affects that of the union. The union building itself has considerable bearing on the atmosphere which permeates it.

The architecture of a union building should reflect this "union atmosphere" and this is a technical problem better left to the architect after he has been informed as to the requirements of the building.

> Poor educational planning of buildings is more often attributed to educators than to architects, in the sense that educators often lack a clear and detailed conception of the functions of a proposed building and of the most economical relationships of space and equipment for performing desired functions ....
>
> In the years ahead college architecture seems destined for scrutiny. Pitched roofs, overhanging cornices, narrow windows, high ceilings, wide halls, decorative columns and porticoes, and hand-carved ornaments may have been in order when this country was a cultural colony of Europe and when materials and labor were cheap, but they hardly belong in an industrial civilization at the middle of the twentieth century. The uses which may now be made of steel, concrete, glass, and other building materials greatly increase the range of architectural possibilities. ... less pretentious and more functional college architecture of the type suggested is more in keeping with the present-day cultural pattern of this country than are the gables, turrets, and nostalgic gargoyles of the past.[1]

Understanding by Architect -- A clear understanding by the architect as to the requirements of a union is essential if he is to design the building desired. The educators responsible must have a clear and detailed conception of the functions of a proposed building and of the most economical relationships of space and equipment for performing desired functions before they commission an architect with his task. An appreciation of the elements contributing to the "union atmosphere" by the educational planners is a prerequisite if the architect is to translate this atmosphere into material form.

The exterior and interior appearance of a union building by no means need be conventional. Most of the earlier union buildings were constructed in conformity with the other campus buildings. Houston Hall at the University of Pennsylvania and Willard Straight Hall at Cornell University are made of granite with leaded windows and pitched roofs and are covered with the traditional ivy. The brick and limestone exterior of Faunce House matches that of Brown's other quadrangle buildings. Yet the combination of Virginian and Georgian architecture of the Illini Union is unique on that campus. Major additions to existing buildings have been made with considerable success, as the theatre wing of the Wisconsin Union, voted one of the best twenty-five contemporary buildings in America at the San Francisco World's Fair architectural exhibit, attests. Other union buildings to which major additions have been made successfully include the Michigan State College Union, Brown's Faunce House, the Michigan Union, the University of Florida Union, the University of Oklahoma Memorial Union. Purdue University, opening its Memorial Union building in 1922, found the addition of sixty residence rooms necessary by 1929, expanded still more in 1936, doubled itself in 1939, and built another one hundred fifty guest rooms for opening in 1955. Here the three wings added to the original structure have made the union a tremendously large building but have kept its activity areas so segregated from its residence wings that its appearance and function remain that of a college union.

A prime example of an architect's statement concerning his design of a union building -- as well as some other excellent information concerning the contribution of a physical plant to a college union -- exists in a booklet published by Purdue upon the completion of its 1929 addition. Irving K. Pond wrote

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[1] Hollis *et al.*, *op. cit.*, p. 54.

> I have said that the building eternally symbolizes to the outsider the unity of the life being lived within. . . . There is strength -- strength of character, strength of purpose, and physical strength manifested in the great simple masses. There is harmony, harmony of ideals, harmony of purpose, manifested in the harmonic and rhythmic interplay of these masses among themselves. This harmony extends to the interplay of materials within the masses . . . . The Union Building in its masses and details is a symbol of life, a symbol of social solidarity in which the individual plays his part to the perfecting of his own character and to the elevation of that society in which he plays his part. [1]

This statement, made in 1929, appears to be in keeping with the dedicatory plaque situated in the Memorial Hall which reads

> In order to establish a permanent monument to patriotic service, the Purdue Memorial Union Building is dedicated as a perpetual memorial to those sons of our Alma Mater who, in the performance of the highest duty of citizenship and in devotion to lofty ideals, gave their lives in the service of their country.

The memorial purpose of this building is furthered by its interior with generous use of stone, tile, arches, dark wood trim and space, and the atmosphere of the union is dignified and formal.

The architect must know, then, what the "union atmosphere" is to be. The variety of patterns in union buildings throughout the country indicate the existence of many possibilities. Even in the buildings erected since World War II the range is considerable, from the University of Maine's red-bricked Colonial building and Macalester's Georgian design through the fairly conventional lines of the University of Washington and Wheaton College unions to the ultra-modern structures of Washington State College, Ohio State University and the University of Oregon. Contemporary or functional design does appear to offer many advantages to the union building. New building materials and methods have greatly increased the range of possibilities over those offered by the symmetry of traditional architecture. Economy and efficiency seem to be best served by modern design and the very act of designing buildings to implement the lives of democracy's citizens is an expression of the union's mission. This kind of design incorporated into that monument to world freedom, the United Nations group, it would seem, might best express the ideals of freedom and self-government desired in creating a "union atmosphere." Nevertheless, it must be remembered that while the larger post-war union buildings are by and large modern to a striking degree in both exterior and interior execution, there remain many new buildings, mostly the smaller ones, which adhere to more traditional and conservative lines. At least one of these, the University of Maine, deliberately is attempting to create in its union an atmosphere reminiscent of the history of that state while fostering a growing, dynamic union program. The important idea is to offer to the architect the clear-cut guidance he will need in creating the desired atmosphere.

Exterior -- The exterior of a union building may be palatial or homely, attractive or ugly, period or modern. Examples of each exist. Its physical presence, ideally in the center of the campus, serves as a constant reminder of its existence. Its exterior may even exert a subconscious appeal or repulsion, but aside from its esthetic aspects and its contribution to creating the elusive "union atmosphere" its actual importance to the overall union program is not nearly as great as that of the interior in which students, staff, faculty and alumni work, play and live. The appearance, arrangement, equipment, furnishings, traffic pattern, noise control, communication, storage facilities and lighting are only some of the interior items which determine the possibility and ease of establishing the environment desired of a college union. If outward form expresses faithfully the function beneath--the credo established by Louis Sullivan and his followers and expressed in so many of the newer union buildings -- the exterior outline is determined by interior arrangement, thus imbedding in the whole structure the ideas and ideals of its purpose. The purposes of the union building and the devices used in achieving these purposes, most of which are included in the program, are the determinants of the building requirements,and the planning of the interior is the logical place to start.

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[1] Irving K. Pond, "The Message of the Purdue Memorial Union Building," The Memorial Union, edited by Mary Margaret Kerr (Lafayette, Indiana, 1929), p. 6.

Interior and Its Contents -- Just as the exterior, by expressing the purposes of the union building, can assist in creating the "union atmosphere," so can the interior. Today's youth, confronted more and more with modern design and sensitive to the implications of functional planning, can assimilate quickly the philosophy expressed by its surroundings. A building which segregates by function while requiring a minimum of travel between areas, which operates efficiently and economically, which combines beauty with durability and utility, which encourages self-expression yet permits unostentatious supervision, which obviously exists to serve people and to help them serve themselves, which dedicates space to self-government, which is planned to be used through all the waking hours unimpeded by archaic gimcracks or obsolete bric-a-brac, which is clean, simple, attractive, well lighted and well used, provides the physical properties which a competent staff uses in the generation of a "union atmosphere."

The union program of 239 activities outlined in Wolf's survey and its ten core-activity areas may serve as a guide for potential union planners but it must be borne in mind that local situations can often dictate departures from the normal union operation. For example, an institution in which the visual aids department is operating a successful motion picture program might well not plan on including such a (core) program in its union activities while, on the contrary, the inclusion of sailing (not a core activity and sponsored by only seven unions) might be a must in a union located in a temperate state and adjacent to a large body of water. At the same time it must be remembered that the union building may house activities not sponsored by the union organization such as student publications, campus radio stations, professional meetings, and conferences, so any building planning must embrace the concept of service to the whole community as well as that of service through the activity program of the union. It is not enough to think wholly in terms of a core-activity program, or even an enlargement thereof, when preparing for a new union building.

The areas of Wolf's core-activity program include dance, social (non-dance), games, art, crafts and hobbies, music, film, discussion, literary, and personnel. Translation of these programs into facilities reveals, as might be expected, that the frequency of occurrence of the various programs parallels the frequency of occurrence of facilities, using as a basis for comparison the results of a study conducted in 1951 by the Association of College Unions.[1] Thus 58 unions sponsored table tennis as an activity and 58 had table tennis rooms. Fifty-four sponsored bridge tournaments and 50 had card rooms. Eleven sponsored swimming and 6 had pools. Seventeen sponsored camera clubs and 23 had dark rooms. Pursuit of these comparisons cannot be pushed very far because of the flexibility of union buildings and possible confusion in terms. Hence, while 32 unions possessed music listening rooms, 41 sponsored record programs; while only 21 unions included art rooms, 40 sponsored art exhibitions. Thirty-two had libraries but 50 made popular periodicals available for general use. The answer, of course, is that many activities do not demand specially designed areas and that a number of the core-activity programs can be held in multi purpose areas such as lounges, which can be used for reading, listening to records music recitals, discussion groups, meetings, card tournaments and the like. Results of the 1951 facilities survey are listed according to frequency in Table 1. Ninety-two respondents out of one hundred and thirty queried are included.

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[1] Edgar Whiting, "How We Are Operating," College Unions - 1951, pp. 58, 59.

Obviously, the existence of specific facilities in union buildings does not mean that any particular facility should be included in a new building. Generally the union program designed to fulfill the purposes of the union is similar to Wolf's core-activity program and the facilities include many of those listed in the 1951 survey. The exact part the union is to play in campus life must be stated clearly before planning is initiated if the result is to be something more than a catch-all for non-integrated ideas.

TABLE 1

SURVEY OF FACILITIES PROVIDED IN NINETY-TWO UNION BUILDINGS IN THE YEAR 1951

Facility	No. of union buildings with facility
Soda fountain and grill	81
Meeting rooms	81
Public telephones	77
Lounges -- coeducational	74
Ballroom	69
Cafeteria	66
Checkrooms	65
Information desk	62
Table tennis room	58
Student activities area	54
Cardroom	50
Billiard room	48
Private dining rooms	42
Dining room with service	39
Bookstore	36
Lounges -- women only	36
Music room	36
Alumni office	34
Faculty lounge	34
Ticket office	33
Music listening room	32
Library	32
Television	29
Barber shop	27
Lounges -- men only	27
Guest rooms	26
Bowling alleys	25
Coffee shop	25
Post office	25
Maintenance shop	24
Photographic darkroom	23
Faculty dining room	22
Art room	21
Theatre	19
Western Union office	18
Commuters' lunchroom	18

Facility	No. of union buildings with facility
Music practice rooms	16
Campus radio station	14
Arts and Crafts shop	11
Outing Club headquarters	10
Chapel	10
Beauty shop	7
Swimming pool	6
Other faculty space	5
Ice-skating facilities	4

> Other facilities mentioned by individual unions participating in the survey included commuters' lounge, commuters' lockers, a recreational park, amateur radio transmitter, cooperative grocery, ski slide, women's dining room, outdoor cement slab for dances, concerts and movies, international center, special chess area, dormitory, shops, convention hall, public-address system, projection booth, sun decks, lost and found departments, overnight rooms for commuters.

Some of these added facilities, such as public-address systems, projection booth and lost and found departments, are incorporated in many buildings but were not included in the original survey, perhaps because they border on the equipment category rather than facilities.

Still other facilities offered by unions include postermaking rooms, travel agencies, lockers for box lunches, duplicating areas, lending art print libraries, and outdoor picnic areas.[1]

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[1] Louis D. Day, Jr. "New Service Facilities," College Unions—1947, Report of Proceedings of the Twenty-fourth Annual Convention of the Association of College Unions (1947), pp. 31.

CHAPTER II

GENERAL PRINCIPLES BASIC TO PLANNING

ORGANIZATIONAL PLANNING

Most campuses abound with committees and for good reasons, since the result achieved by the meeting of minds often is greater than the sum of the parts. The use of committees in planning buildings is not new and has much to recommend it. It can result in a generally high quality of decision, in the consideration of all available community resources, in careful planning, in the proper utilization of the campus specialist and the expert, in a better understanding of the union by the campus in a building well adapted to the campus needs and in a more effective expression of the union philosophy.

Quality of Decisions Affected by Group Judgments

A rather considerable body of evidence has been gathered in recent years to support the claim that group thinking is superior to that of individuals, such evidence reinforcing the time-honored practice of appointing faculty committees to meet college problems. Thus the reiteration that a planning committee be appointed early, which occurs in college union literature and at union meetings, is well founded.

Each institution has its own machinery for naming committees and it would be foolhardy to attempt to recommend any sort of an appointment schedule. Positions, titles and responsibilities vary among institutions. Personalities, abilities and interests have much to do with inclusion on committees. Representation of various interests must be considered, although membership without regard to potential contribution is to be avoided. Interest in the union, understanding of campus needs, leadership and technical knowledge are some of the qualities to be considered in selecting the committee.

Bearing in mind the qualities desired in committee members there are a number of candidates who, by their positions alone, should be given consideration for appointments. Among these are the president and personnel deans or their representatives, members of the board of trustees or regents, interested alumni, representatives of the buildings and grounds department, faculty members with undergraduate or other union experience, residence director, activities coordinator, food director, representatives of the student government and other student organizations, college architect and the prospective union director. While hiring a union director in the planning stages of a building may seem premature, it is quite likely that he may save his salary many times over in the economies his professional advice may effect. In addition to the financial advantages of hiring a union director early, the director is permitted to know the campus and its needs, to make the transition from planning to union program a smooth one and to handle the myriad administrative details which arise during planning and construction. The director should probably be made the executive secretary of the committee.

Consideration of Community Resources

So varied are the kinds of communities in which colleges are located that any general statement concerning them becomes difficult. A union building, containing the service and recreational facilities that it does, is apt to affect the community in which it is situated more than any other campus building, at least on a continuing basis, and it may become itself a community resource. In this respect policy concerning the projected community usage of the union building must be thought through, as it determines to some extent the capacity of many areas. Some unions permit non-campus persons to use at least some of their facilities but there are serious legal and public relation problems to be considered in connection with this practice. At least one state legislature has been asked to prevent a union from servicing off-campus groups, and other unions have encountered law suits or similar difficulties over the years. The relationship between town and gown, particularly in such commercial areas as hotel rooms, bowling alleys, barber and beauty shops, dining rooms, ballrooms and bookstores demands detailed consideration. The existence of adequate facilities in the community may suggest the elimination of such areas from the union plan, yet the lack of university control of supervision, prices and policies, plus the always present possibility of change in ownership, should be considered when private operations are included in an inventory of desirable facilities. The educational purposes of the union must be paramount in building planning if the utmost is to be achieved by the finished structure.

Of course, the community includes the campus itself and mention should be made of this now although it falls more properly under the section dealing with campus needs. Well-established offices for such student organizations as the newspaper or radio station might well eliminate their inclusion from a new building. A well-located bookstore or post office, adequate dining services, a satisfactory theatre, a popular craft shop, are examples of items which might be omitted from a union building because they presently are serving their purposes. It should be remembered, however, that the gathering together of activities permits efficient supervision, guidance and physical maintenance,and engenders the creation of those human qualities implicit in the word union.

Initial Steps to Planning

A planning committee will be subjected to a number of pressures. Faculty, alumni, students, staff, and faculty and student wives may all have vested interests in the building. Faculty and alumni lounges, separate dining rooms, refreshment kitchens, serving rooms or similar areas may receive unexpectedly strong support. The prospective union director can be of much assistance in the determination of areas to be included or omitted. The consulting architect for the Association of College Unions recommends an educational consultant from the very beginning, with one of his chief duties being that of assisting in the problem of priority. Ideally, the educational consultant should be the future union director, although since he may lack the experience desirable while possessing the ability necessary to operate the union successfully, an outside consultant may be indicated. At any rate, the planning committee should have professional advice in determining the components of the building, yet it must not relinquish its knowledge and understanding of the local situation when making its decision.

The use of surveys assists in determining facilities when used in conjunction with the knowledge and experience represented by the planning committee. Butts suggests two surveys: the first, a rating of facilities by the student body; the second, an office and meeting space requirement list by faculty advisers and student leaders of the various campus organizations.[1] While the latter survey may be made by the completion of a form following an introductory meeting, the former presents a rather formidable problem, particularly on large campuses. The expert advice of the statistics department may well be utilized in this respect since the problems of distribution, collection and handling of the raw data can be sizable ones. The method adopted by Ohio State University produced such satisfactory returns (8,000 ballots) that it is recommended for further consideration. Questionnaires were distributed to students in all ten o'clock classes on a given morning with instructions to check their personal preferences as to each of fifty-two union facilities, marking each facility essential, desirable or unnecessary. (Butts suggests the addition of no opinion as a fourth category.)[1] The questionnaire form was printed on IBM form sheets to permit automatic tabulation. In addition to the questionnaire, suggestion boxes were placed about the campus and three hundred suggestions were received by this method and reviewed by the committee. Publicity by means of radio, newspaper and posters emphasized that student suggestions were wanted. Such a survey has much to recommend it, not only because of the suggestions which may result, but also because of its public relations impact.

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[1] Porter Butts, "Desirable First Steps in Organizing a Union Project," College Unions-1950. Report of Proceedings of the Twenty-seventh Annual Convention of the Association of College Unions (1949), pp. 33, 34.

If the mass method of circulating questionnaires is adopted it should be preceded by a period of orientation to permit an explanation of the purposes and functions of a union, particularly on campuses where no union exists, since answering such a questionnaire without an appreciation of the meaning of a union jeopardizes the premise of the survey. Butts prefers the interview basis of questioning which, of course, permits a better opportunity to assure understanding of the union project, but also requires much time and effort while reaching fewer students. Consideration should be given to the desirability of surveying faculty and staff as well as students, regardless of the method of survey adopted.

Because the college union by definition embraces everyone on the campus, the planning of the building should take everyone into consideration and a committee can assure comprehensive planning. Such diverse items as the extent of women's hours, campus traffic patterns, newspaper deadline, student's affluence, automobile regulations, campus week-end population, faculty social life and dining facilities in fraternities may affect the operation of a union. The possible impact of financing the building on its planning should not be overlooked.

Financing -- While financing of the building is not considered in this work as a part of the planning procedure, a few precautions should be observed lest fund-raising affect the planning. Money for union buildings is obtained, as a rule, in one or more of five ways: subscriptions or gifts, accumulated reserves from associated student funds, bookstores' earnings or other enterprises, student fees paid specifically into a union building fund, loans and state appropriations.

It is obvious that some preliminary planning should precede attempts to raise money, if only to assure the availability of material for publicity or information purposes. A campaign for voluntary subscriptions, particularly in an area where the union movement is unfamiliar, requires considerable education of prospects before real "selling" can start and it is here that a grievous error can occur.

> The first gun fired in the campaign is the widespread mailing and distribution of a handsome, illustrated brochure describing needs and picturing the proposed building. And here one of the typical planning errors often occurs. In the haste and anxiety to get a picture which will arouse interest and make the

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[1] Butts, ibid., p. 34.

project seem tangible, the money-raisers and publicity office insist on a sketch right now. A picturesque sketch is duly made, based on nothing but a similarity to some other Union or the general architecture of the campus; the conception of the building thus gets fixed and frozen; and the committee and the architect never get back to a fresh start and a thoughtful consideration of what the building really ought to be on the inside or to look like on the outside. When they do start over with some careful planning and turn up with a new design, they are plagued by contributors who say, "But I thought I gave my money to such and such kind of building, and now you've changed it. How come?" Preliminary sketches, no matter how tentatively put forward, are often regarded as commitments, especially by relatives and friends of gold star men where war memorial features are shown and by organizations which have vested interests in particular features.

The better solution, obviously, is to do the thoughtful planning first and the campaigns second, rather than vice versa.[1]

Since a union building must be adaptable to change with the changing years and needs of its institution, fund-raisers must exercise restraint in making building commitments which might serve to inhibit the future development of a worthwhile union program.

Some unions, notably Houston Hall at the University of Pennsylvania, Faunce House at Brown, and Willard Straight Hall at Cornell, were gifts from one individual or family. Certainly a happy solution to the acquiring of capital, such gifts can result in hampering the continuing progress of a union. Thus, in a day when coeducation is widely accepted we find men's unions at such campuses as the Universities of Michigan, Indiana, and Toronto confronted with dilemmas resulting from the change of campus population distribution and recreational pattern. The latter's union is restricted to men by the deed from the donor.

Institutions fortunate enough to receive union buildings as gifts are not necessarily restricted by the terms of such gifts; in fact, the oldest (Houston Hall) and the third oldest (Faunce House) union buildings in the United States received gifts from the families of the original donors to provide additions as required by the expanding student bodies and changing educational philosophies. Whether gifts are large or small, few or many, does not alter the need for care in fund-raising, if severe limitations of change and growth are to be avoided.

The accumulation of funds through earnings or through student fees is apt to be a lengthy process, hence many colleges are resorting to the pledging of such income as security against which they may borrow, either through bond issues or mortgages. In 1951, according to an Association of College Unions survey, at least thirty-five unions were paying for some or all of their construction costs through student fees. As only eleven out of the ninety-one colleges responding did not levy fees and as only three of these eleven did not receive some institutional financial support (they were self-supporting),[2] it is apparent that fees or their counterpart in institutional subsidy comprise one important element of the financial scheme of unions. The other important element is receipts from services and activities. Much of the union building and program produces no revenue while representing considerable expense, hence care must be exercised that maintenance of equipment, facilities and, most important of all since it is the raison d'être of the structure, program, does not suffer because of the unavailability of funds for anything other than amortization of the building debt. Consequently, fund-raising must not pledge so large an amount of the revenue of the union that the building will fail to function as intended. If such a condition does arise it can result in one or more of the following conditions occurring in the union:

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[1] Porter Butts, "Planning a College Union Building in 1947", College Unions - 1947. Report of Proceedings of the Twenty-fourth Annual Convention of the Association of College Unions (1947), p. 11.

[2] Edgar A. Whiting, "How We Are Operating," College Unions - 1951, pp. 58, 59.

1. Lack of proper maintenance and replacement of equipment and facilities resulting in an unattractive, inefficient and unserviceable structure.

2. Failure to make its full educational, social and recreational contribution to the community because of inability to pay for proper professional leadership services, varied program, or needed equipment.

3. Establishment of a commercial atmosphere, perhaps with high prices, because of pressing need for revenue.

Legislative appropriations, limited to public institutions, is a relatively new form of financial support and can assume two forms: (1) an outright grant, in which case the precautions applying to fund-raising through gifts should be considered; (2) an appropriation for a bond issue on a self-liquidating basis, wherein the precautions mentioned in connection with the use of fees and revenue as security must be considered. An example of an outright cash appropriation of funds is the $950,000 received by North Carolina State College for constructing and equipping a union building. Arizona combined both methods when it appropriated $300,000 and authorized a $400,000 loan for a union building at the University of Arizona.

More Efficient Use of the Expert and the Specialist

On every campus there are experts, professional and amateur, who possess knowledge of considerable value to those planning a union building. These resource persons should be consulted at varying stages of the planning, usually the earlier the better. Naturally all such persons cannot and should not be included on the planning committees and some of them, such as faculty wives, may not have direct connection with the institution. However, any local person with information which may be of assistance should be invited to contribute. The number and kind of experts available among faculty, staff and others, including students, vary with the kind, size and organization of each institution. A few of the resource persons likely to be found include:

Instructional Staff -- Civil, electric and mechanical engineering, architecture, recreation, physical education, art, music, accounting, office management, foods, interior decoration, hotel and restaurant management, advertising, marketing and salesmanship, drama, speech and debating, landscape architecture, sociology, group work, audio-visual aids, radio, journalism, industrial arts, applied art, dance, photography, and faculty advisors to organizations which may be located in the building.

Administrative Staff -- Building and grounds superintendent, university engineer, purchasing officer, bookstore manager, food service director, chief of campus police, director of housing, director of the YMCA, curator of art gallery or museum, alumni secretary, director of public relations, and publications officer.

Students -- Some, particularly older ones and veterans, may have acquired skills and knowledges of considerable value to the planning committee. Certainly student representation from groups such as the campus newspaper, radio station, camera or outing clubs, drama group, craft or chess organization which may be housed in the new building should be asked to assist in the planning of their quarters. Their knowledge, often based on the practical experience of working in inadequate quarters, can be invaluable, although their special interests may militate against them when student membership for the planning committee is considered.

Caution is necessary in utilizing the advice of such persons. Hobbyists need not be experts, particularly in the choice and use of equipment and planning of areas. Specialists are apt to consider their specialities of greater importance than others, recommending space and equipment requirements that collectively would result in a building expensive beyond reach and elaborate beyond needs. Therefore, the qualifications of experts must be genuine and information obtained from them used only as a point of departure, with final decisions as to the use of this information resting with the planning committee. Certainly no commitments should be made concerning final utilization of information obtained,and tact should be used when working with such resource people to assure a continuation of their interest and support even if their suggestions are not followed.

Utilization of the services of a campus expert in planning a college union building is well illustrated by the manner in which the University of Oregon approached the problem. Here the Supervising Engineer of the university was assigned to head the investigation and this man spent the better part of a year visiting some twenty union buildings of various kinds at such distant points as Colorado, Massachusetts, Toronto, Florida and southern California. The results of each inspection visit were recorded on a prepared form along with additional information, comments and photographs. This information, filling six ring binders, resulted in the envisagement of an ideal union and in plans for a building of two hundred and fifty thousand square feet which, like most ideals, was reduced. The resulting Erb Memorial Student Union at the University of Oregon contains one hundred and nine thousand square feet.

Consultants -- Consultants should be brought into the planning wherever necessary. Such specialized areas as food service, bookstore, theatre or radio station may require the hiring of additional experts besides those available on campus and through the architect's office. Ample precedent for this practice exists as evidenced by outstanding facilities produced through such aid (Wisconsin Union Theatre, consultant Lee Simonson; Ohio State Union, food services, consultant Stacey W. Keater; Iowa Memorial Union bookstore, consultant Ken White). Naturally, the advice and work of these men must be correlated with the planning for the rest of the building.

More Effective Interpretation of the Union to the Campus

A very real possibility exists that a union building may not be accepted blindly. An appreciation of its purposes must be obtained if it is to be a success. Such an appreciation is doubly necessary if a financial campaign precedes the actual construction, as the results of the campaign undoubtedly are determined in part by an understanding and approval of the union idea. Reference has been made already to the desirability of orientation prior to a campus survey to assure better understanding concerning the union. The survey itself assists in interpreting the union to the campus. Moreover, each person participating in the planning can become a salesman for the union idea. Those involved in the orientation, the survey, fund-raising, public relations, as experts or specialists, or as members of the planning committee, should be well versed in the details of the union building. The more persons who feel that they are a part of the project, the more advocates there are to spread the union doctrine.

All connected with the planning are better equipped to operate as emissaries of good will if they possess up-to-date information, hence an accurate and inclusive mailing list is desirable to permit the circulation of news about progress and problems. Frequent releases through the campus and commercial newspapers and radio stations assist in reporting progress to the general public. The publication of such stories on the campus is quite important in maintaining local interest in and support of the union building. Architects' drawings, floor plans and scale models are valuable in the transmission of information, and ceremonies like ground-breaking and cornerstone-laying are helpful in keeping interest alive until opening day.

Better Adaptation of the Building to Campus Needs

Mention was made previously of the dangers of using the plans of existing unions for new buildings. The unique qualities of a union building demand that it be custom built. Inclusion of facilities merely because they appear in other buildings is not apt to result in a plant which satisfies the needs of the local campus. Furthermore, the reproduction of an existing building may result in the exclusion of facilities which, while not normally found in union buildings, would be most desirable in a particular situation. Organizational planning, if only because it represents so many viewpoints and interests, is well suited to making the building fit the campus. It should devote itself to obtaining as many facts about the institution as may be pertinent.

If the university has a development plan, thought undoubtedly has been given to the union building and it is to be hoped that rather complete and constructive thinking resulted. Perhaps the first stages of the planning committee's work were initiated then. Realistically, however, this does not seem likely, since a development plan usually includes a number of buildings to be erected over a period of many years and detailed planning of most of these buildings will be postponed until the possibility of their initiation is near. While this may be somewhat short-sighted, it does eliminate the possibility of perpetuation of archaic plans. At any rate, a development or growth plan shows the location of proposed buildings and it may include such information as expected enrollment, number of resident students, development of certain instructional departments, expansion of food and other service facilities, future utility, traffic and parking plans, style of architecture, financing proposals, and many other items which would affect the union in some way or other.

Local recreation -- An accurate knowledge of the local situation is a necessary prerequisite to future planning. With much of a union building devoted to recreation, the whole recreation pattern of the campus must be understood. The part which the athletic program plays in recreation through its intercollegiate and intramural programs, play days, corecreation and service program, on either the participating or the spectator level, must be considered. The dramatics and music programs on both levels are examples of other recreational activities which exist on most campuses. Other such programs include debate, dancing, lectures, newspaper, radio, yearbook, and literary publications. Club and organizational activities embrace a wide area, including the religious, hobby (photography, outing, sailing, skiing, square dancing, chess, philately), service (student government, hospitality), professional (accounting, engineering), academic (foreign language, honorary), and cultural (art, literature). The social life of living units - fraternities, sororities, dormitories - is often time-consuming. Special occasions such as Homecoming Week Ends and Winter Carnivals are part of the recreation picture and so is the time devoted to off-campus pursuits, whether they be motion pictures, symphonies, bowling or driving. Actually, an imposing survey could be made on the recreation pattern of nearly any college in the country and such a survey would be of great value to union building planners. With or without such a survey, information of this nature should be obtained. Much of it is available from student members of the committee, organizational faculty advisors, attendance records of games, plays, concerts, lectures, meetings and from whoever schedules meeting rooms and events on the campus.

A knowledge of the existing recreation situation should be accompanied by an appraisal, since the quality of the program is of prime importance in an educational situation. A welter of activities is not enough, but rather a variety of high-level activities which introduce students to many different experiençes is to be sought. An examination of an existing recreation program, coordinated or not, should consider the desirability of new activities and concomitant facilities before recommendations concerning a union building are made. Reference to Wolf's list of activities may assist in such an examination.

Existing Facilities -- Analysis of the program leads to review of the existing facilities, particularly as they affect those to be included in a new union structure. There are many facilities which may be included in a union plant that do not have to be there merely because it is a union. For example, if an adequate theatre already exists the inclusion of a similar structure in a union building is questionable. Successfully operating craft shops or radio stations may well be omitted from a new union building, while music listening lounges and art galleries maintained by the academic departments may serve the campus so well that provisions for them in the union building may be kept at a minimum. By the same token, for administrative reasons such as supervision, control, equipment issue and staff economy, such facilities may be moved to the union building or duplicated therein. For the reasons of centralization intimated by the word union, it may be desired to place all such facilities in the building. As long as consideration is given to all facilities, existing and planned, from the viewpoint of the campus-wide program, a reasonable determination of facilities to be included in the union building seems assured. It must be remembered that a union building usually operates morning, noon and night seven days a week and that its philosophy and policies differ from those of most other university departments. It may, therefore, be advisable to duplicate some facilities because they serve different purposes.

On many campuses the recreational facilities in living units are quite extensive. In addition to lounges they may include television rooms, table tennis and billiards tables, and dancing areas. Such facilities serve to lessen the demand on similar ones in the union. On other campuses the large number of commuting students may indicate a considerable need for facilities such as lounges, music rooms and game rooms to be available during the day. Calling attention to the trend towards more self-sufficiency in living units, a union director of more than twenty-five years' experience sounds a warning.

> This suggests a prediction that within ten years nearly all students in residence will have in their college residences facilities for most of their personal needs, a place where requirements for sleeping, eating, loafing, playing and reading will be conveniently and constantly available. . . . it is my opinion that for the future, the lounge, the provision for regular meal service, and the library or browsing room and even the ball room may assume a position of lesser importance in the college union. . . . . Its theatre or auditorium, its facilities for activity in student organizations, its many services, its larger game rooms and its rooms and shops for the hobby interests of the students are the elements that will not appear in the college residence and these are destined to have a greater validity than heretofore.[1]

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[1] Nelson B. Jones, "The College Union and The Residence Hall," College Unions - 1950, pp. 18, 19, 21.

In this area of residence units alone a clear picture of the present and the future campus recreational picture is betokened.

Service Facilities -- As indicated in the definition, a union building usually includes some service facilities. Determination of what services should be rendered by the union represents something of a risk, in that many of them are revenue producing and entail investments in equipment and overhead which may not be warranted by actual usage. Thus, while union beauty parlors have proven to be generally unprofitable, a rural university might feel that it should install a beauty shop regardless of its revenue production because it offers a service not available in nearby commercial shops. The foregoing is offered as an example of what may face a committee when it attempts to solve the problem of including services in the proposed building. It should be realized that separation of the physical plant from operating procedures is impossible and any facility, particularly in the service category, must be evaluated in terms of operation and maintenance costs, potential revenue and desirability. If a service facility is included, its operation potential must be considered, lest the union end up with a "white elephant" on its hands. Certainly few institutions would wish to repeat the error of the college, cited in the introduction of this study, which placed a cafeteria in its union building although college policy required all students to eat in the commons. By the same token, few would wish to create a situation whereby facilities appearing elsewhere after the union building is completed jeopardize the function of the union, yet such a situation can arise. Thus the opening of a campus service center which included a soda fountain, bookstore, post office and lounges at the University of Florida caused anxiety for the future of the union program, and the opening of Statler Hall on the Cornell campus forced the union there to prepare to limit or curtail some of its services. The inclusion of facilities in the union building and the institution's development plan are definitely interdependent.

The building consultant of the Association of College Unions cautions as follows:

> Consider with special care the advisability of including these facilities: bookstores, faculty clubs, a hotel unit, separate lounges for men and women, offices for university administration officials (other than union or alumni) and religious organizations, and beauty shops. These are facilities about which there is widely varying opinion, which on some campuses have met with doubtful success, or which have a doubtful relation to the central purpose of a union.[1]

Such advice, the product of over a quarter-century of experience, should be considered.

The questions which should be asked concerning each service unit in the union building should include:

1. Is it needed?
2. Does it belong in the union?
3. Will it support itself?

To the question concerning need there may be many answers. Desirability should not be confused with need, even though units may be included because of their desirability. All campuses need something, however, and many require service facilities which might be placed in the union. The urgency of the need must be determined carefully by conference, survey and experience.

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[1] Porter Butts, "Before You Build a Student Union," College Unions - 1946. Report of Proceedings of the Twenty-third Annual Convention of the Association of College Unions, p. 22.

Local requirements, of course, determine the desirability of including facilities not usually considered as belonging in a union building. Such facilities might include offices for alumni secretaries, deans, religious associations or administrative officers. Since evidence exists which questions such inclusion, much thought and investigation is urged and reexamination of the purposes of the union recommended.

The financial cost of operation can be of great importance to the whole union program. The spending habits and resources of the students may augur success on one campus and failure on another. If profit is expected to accrue from a service unit, careful scrutiny of the whole proposition on a cost accounting basis should precede the final decision. The same is true of a self-supporting area and any service which is expected to lose money must be labelled as such, with the proper budget allocations made.

Campus population is of prime importance in planning a union building. Present and future enrollments determine the size and scope of the structure as well as the provisions for growth. The ratio of men to women on coeducational campuses should be known, both among resident and commuting students. The number of resident and commuting students should be ascertained and the effect of any projected dormitory construction on the union program contemplated. The number, size and schedule of meetings of organizations now using university meeting rooms, plus those who are using other facilities who may wish to use union rooms, plus expected new groups which usually accompany the enlargement of enrollment expected by so many institutions, should be estimated. Those organizations using or needing permanent offices should be listed. The week-end and holiday recreation pattern and possible changes in it which may be wrought by a new union building and its program and policies, the setting--urban, rural or suburban--of the university and its program potential, the nearness of other educational institutions and military installations and their possible effect on programming, are other items to be considered. Campus regulations and customs such as entertaining hours in living units, women's curfew, smoking, dating habits and rendezvous affect the planning. The size, kind and future of summer sessions are very important and the use of the campus for conventions and conferences has ever-increasing meaning to the union. Local housing facilities for visiting athletic teams and guests may enter the picture and the whole food service situation--compulsory board, eating in living units, local restaurants and grills, evening refreshment catering to living units, available refreshment services, location of the building in relation to living units, classrooms, athletic facilities or theatres -- demands careful review. The food service of the union must be coordinated with all of the other food services if it is to best serve its purposes.

Questions of utilities, sewage, heating, trash and garbage disposal require thought. The added burden on utility lines may determine the kind of fuel to be used for cooking or for heating, or call for changes in the telephone or electric circuits. The capacity of existing water mains, central heating plant, if one exists, or local incinerator may dictate the early expansion of such facilities. The use of garbage grinders might be impracticable under local sewage disposal conditions.

More Effective Expression of the Union Philosophy

The statements of purpose of most individual college unions sound much the same but closer examination indicates that in actual operation there is a wide divergence in the manner in which purpose is served. Each union assumes a character of its own, whether by chance or intention. Organizational planning by a committee well aware of what the philosophy of its union is to be permits the building to emphasize those aspects which the university considers necessary or desirable. In this way the union building fulfills the general purposes of a union while meeting the unique requirements of its own campus.

One building may lay stress on a music program; another, art exhibition; a third, games. Wherever the stress may come, it occurs there because the planning committee felt that it best served the union's purpose.

EXPANSIBILITY

Demand for Expansion

Evidence indicates that, barring events of cataclysmic proportions, the enrollment of colleges will increase sharply in the future. Colleges, therefore, are confronted with the enlargement of nearly all facilities, most of which can be cared for by additional buildings. While it is relatively simple to plan on erecting more dormitories or classroom buildings without altering their function noticeably, such an expansion of union facilities (in effect, several union buildings) would tend to destroy the unifying role implicit in its name while raising other problems of administration, programming, supervision, communication and scheduling. Physical growth of the union usually can best be achieved by expansion of the building, if such expansion has been well provided for many years in advance. Chapter I has related the history of growth of some union buildings. The experience of Houston Hall at the University of Pennsylvania illustrates the difficulty of underestimating the union potential, since in December of 1939, the three-months-old addition of a freshman commons, faculty lounge and dining room, music and drama rehearsal hall, band office and storage, undergraduate council office, meeting rooms, a store, post office, reading room, banquet and dance hall, kitchen and game room (including billiards, table tennis and bridge tables) already had been declared inadequate. McGoey's survey on "Main Shortcomings of Union Buildings" found that under the heading of General Planning "the most-recurrent note was the admonition to 'build large'.... There was frequent lack of planning for growth of the Union activities as well as the lack of planning for the growth of the College or University."[1] Hence a common lack of space in union buildings becomes apparent. Both original and future space requirements demand consideration from the outset.

Space Requirements

An initial requirement for expansion is space into which to expand. Expanding vertically demands expensive structural strength in the original foundations and supporting walls or columns. Furthermore, vertical expansion does not provide the flexibility of enlargement often needed. Lateral growth, therefore, seems more practical on all but the most crowded campuses, and substantial open area contiguous to the union building should be allocated for union expansion. Since the union building is located ideally near the center of campus life, the acquiring of land sufficient for present and future needs is apt to pose a problem. Once a site that meets the requirements is obtained it should be clearly designated in the development plan and the area for expansion kept inviolate, lest encroachments upon it make impossible future desirable growth of the union building. This can result in the failure of the whole union operation if a badly overcrowded, inadequate union building is prevented by its neighbors from expanding to the point where it can be of real service. An illustration of such a condition exists at the University of North Carolina where space originally allotted to a future wing of Graham Memorial Hall was used as the site for a science building. The union building, inadequate and unable to expand, no longer is a busy center of activity. The university, forced to seek a legislative appropriation to permit construction of an entirely new building, has lost much of the contribution of a real union.

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[1] Thomas A. McGoey, "The Main Short Comings of Union Buildings, "College Unions - 1947. Report of Proceedings of the Twenty-fourth Annual Convention of the Association of College Unions (1947), pp. 22, 23.

Expansion in Kind

Given room for expansion of the union building, planners must consider enlargement in terms of kinds of facilities. Thus, an increase in food areas should not necessitate the addition of duplicate and separate kitchens, dishwashing areas or dining rooms, when expansion of existing facilities may accomplish better results with large savings in equipment, supervision, maintenance, labor, transportation, record keeping and storage space. Similarly, the widely used scheme of extending a ballroom into a new wing furnishes the required floor space without making necessary the construction of a whole new dancing area. Obviously, the location of the original ballroom must be such that a new wing will join it properly to afford circulation of dancers, view of the orchestra, admission control, cloak checking and transmission of sound. If the ballroom doubles as a banquet hall, serving facilities and efficient communication with the kitchen and dishwashing rooms must be foreseen and storage facilities for tables and chairs incorporated in the planning.

Service Facilities

Expansion of the building must not disregard service facilities such as delivery entrances, rubbish areas, storage spaces and control stations (as in game rooms, food areas, or browsing rooms). Lines of traffic may be changed by building additions so that a cafeteria line flowing normally into a dining hall may, upon the enlargement of the latter, be forced to cross itself to reach the new facility unless such a contingency is anticipated. Audiences at events such as concerts, motion pictures or dramatic productions in an added theatre wing should not interfere with other activities because intermission or before and after show crowds were not considered during either the original or later planning stages.

Utility and service lines such as electricity, telephone, heat, water and sewage should be installed in a new building with capacity to permit a later tension of area to be served without major disturbance. Public-address, air conditioning, intercommunication and time-keeping systems should be capable of enlargement. Corridors should be easily extended to afford access to new wings. (To traverse a distance of thirty feet from the coffee shop of the old wing to the theatre lounge of the new wing of Brown University's Faunce House requires the use of two flights of stairs despite the fact that they are on the same floor.) Stairways should be enclosed in wells leading from corridors rather than serve as extensions of the corridor itself. The effects of expansion on natural lighting, ventilation and traffic should be considered. The warning of architect Michael Hare that the union building "symmetrical in arrangement and monumental in appearance affects the usefulness of the building and possibilities of expansion"[1] should be heeded.

New Facilities

In addition to expansion of existing facilities is the possibility of expansion by means of new facilities. This requires advance thinking. New problems that may be posed by new facilities should be anticipated. The addition of bowling alleys introduces a noise, a factor which may govern the eventual location of the alleys. A theatre wing or ballroom brings evening peak loads and vehicular traffic; a bookstore, access and storage problems. Adding guest rooms may require separate entrances and more control areas. Where possible, the installation of a new facility should enhance, not lessen, the function of old ones. Thus, some of the theatre crowd normally drifts into other union areas, usually increasing their activity, yet it is quite possible for the resultant traffic and parking congestion to serve as a depressant to union activity on theatre night if thought is not given to such a possibility while the original structure is being planned.

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[1] Michael M. Hare, "The Planning Problems of the New Union," The Bulletin of the Association of College Unions, XIII (October, 1945), p. 6.

FLEXIBILITY

Union programs are so varied they strain the most pliable of buildings. Conventions of hundreds of persons and committee meetings of five may use union facilities simultaneously. Banquet plates and ham sandwiches may issue at the same time from union kitchens. A large ballroom tonight may have been a theatre-in-the-round last night and may be the scene of a large tea and reception tomorrow. The lounge in which a piano recital is now being given may seat twice as many people an hour later for a lecture on foreign affairs. An outstanding example of a flexible union facility is the theatre wing of the Wisconsin Memorial Union, in which a 1300-seat auditorium may be reduced to a 425-seat hall by the simple expedient of drawing a curtain and closing a balcony; or, by closing the balcony alone, a 688-seat hall may be produced. This wing, embracing a small 168-seat Play Circle; stage shop; costume shop; lobby-galleries which can also serve a future outdoor theatre and now are used in connection with outdoor dances; rehearsal rooms of stage size tripling as music practice and meeting rooms, a large dressing-reception-lounge room with attached kitchenette; a lounge which, when closed off by folding doors, can be used for rehearsals; radio studios which broadcast programs originating in the wing; a record listening lounge; motion picture projection booth; glassed-in observation rooms for drama students; craft shops and darkrooms, is flexible enough to serve hundreds of thousands of persons per year. The Play Circle and main theatre together offer nearly one thousand events annually.

Planning a structure to be flexible enough to meet all the requirements of the union program is a complex task. It involves planning for many multipurpose rooms and elimination of as much single-purpose space as is possible. It calls for furniture and equipment which can be moved easily or rearranged to meet new situations. Such items as folding chairs and tables should move quickly on dollies and, if necessary, elevators. Corridors and stairwells become display areas for art work and publicity. Lounges may turn into music rooms, reading spaces, discussion centers or drawing rooms. Folding walls may open to make one large ballroom out of two smaller ones.

Single-Purpose Areas

Areas serving one purpose only by nature are more apt to be better adapted to their requirements and some areas must be used for only one activity. While this applies to nearly all of the service areas such as kitchens and maintenance shops, it is also applicable in such recreation places as bowling alleys, billiards rooms, craft shops, music listening booths and darkrooms, where fixed or heavy equipment dictates specialized usage. Certain other areas, while usable for more than one purpose, do not lend themselves easily to multiple use. Thus, table tennis tables which are sturdy enough to withstand the vigorous use to which they are subjected in union buildings are not easily moved and stored, although the domestic folding table is. The size of music practice rooms indicates that they might serve as additional committee meeting rooms but their pianos reduce this likelihood. Here, then, flexibility of an area must be weighed against other principles of functionality, efficiency, and safety.

Permanent Space Allocation

From the foregoing observations it is apparent that flexibility is more easily achieved in some areas than in others. In most union buildings office space is allocated to student groups which serve the whole campus, among such groups being the newspaper, yearbook, radio station, outing club and musical organizations. It is evident that allocation of such office space renders it inflexible and, depending on the local situation, it is also evident that such inflexibility is necessary to permit the publication of a newspaper or yearbook or the continuity of radio broadcasts. It is advisable to keep at a minimum consistent with local needs the allocation of permanent, full-time space. Meeting rooms located near a large common central office and filing bureau is about all that most student organizations need for the conduct of their business. A carefully arranged schedule of room assignments permits a much greater square-foot usage of meeting space and at the same time frees space which might otherwise have been allocated to single groups and have remained idle much of the time. If deemed desirable, certain rooms might be named as assembly places for such organizations as the student and union governing groups and service groups, but the wisdom of reserving a room for monopoly is questionable.

Fluctuating Use

Traffic through the union building fluctuates according to times and events. The building should be able to cope with most of the peak loads while adjusting to such slack periods as vacation times or extended holidays. Meeting rooms not normally used on week ends may serve as auxiliary check rooms for a Saturday night dance. Lounges may serve as smoking rooms for concert-goers at intermission, or judiciously placed folding walls may expand serving facilities at large receptions. By the same token unused areas should permit segregation when only portions of the building are in use.

When planning multiple-use facilities, consideration must be given to all functions of the areas. Certainly wall-to-wall carpeting would not serve an area intended as an auxiliary dance space, nor would a rough cement floor. Lighting and ventilation must satisfy in all roles. Thus, if a ballroom is to be used for arena dramatic productions, its lighting should afford the decorative effect desired for dancing but also be able to provide the intensity and direction needed for the actors. Also, the heating and ventilating system should have enough range to keep a crowd of active dancers comfortable in warm weather, and provide warmth to the small audience which might attend the drama in winter.

The history of unions indicates that the building itself should be as flexible as possible since union activities and functions seem to be in an almost constant state of flux. Illustrative of this everchanging status has been the introduction of television. One of the earlier unions (at Minnesota) to install a television set did so in its fine arts room. Brown, after debating whether a paid employee should operate its set, decided on student committees to operate the equipment at times selected because of program content and in several, varying rooms. In 1949 it was still an unknown, but by 1953 it was taken in stride with general agreement that jacks installed at various points in the building provide the desired flexibility. In 1957 the control of color television sets was a new problem. Fortunately, television requires little in the way of structural alteration other than the installation of antennae and wiring, but other future modifications necessitated by technological advances, shifts in student enrollment, new buildings, turns in institutional or educational philosophy or many other changes can bring about sweeping physical adjustments.

A prime example of a building which has proven flexible enough to meet the changes of the years exists in Brown University's Faunce House, now the second oldest union building in the United States. By moving interior walls and doors, the building was altered to meet the changing demands over a period of half a century. A cafeteria became a game room and then a lunch room for day students. A billiards room was converted to a bookstore area and then back to a billiards room. A kitchen became a post office, a bookstore a table tennis area, and office spaces replaced meeting rooms.

Structural Requirements

Making a building flexible enough structurally to meet the requirements of the future would appear to involve clairvoyance, but an architect should be reminded of this feature of union building planning. Elimination of internal bearing walls; placement of ducts, stair wells, plumbing and wiring; use of portable modular walls in areas such as organizational spaces which may fluctuate in their requirements; and segregation of like facilities are some of the devices which can be used to permit building changes in the future. Rooms which open up by means of folding or sliding walls should be decorated to present an integrated appearance at all stages. However, the correct operation of an area should not be sacrificed in an effort to achieve flexibility. Careful planning may permit the attainment of flexibility without compromising functionality.

SAFETY

A college union building is basically a public building. Great numbers enter it yearly. It houses not only its patrons and employees but also visitors who, because they are usually strangers to the structure, require special consideration. Its safety program must consider the hazards inherent in its own operation and materials as well as those occasioned by its public usage.

Accidents are a major factor in any safety program. In institutions similar to union buildings these accidents can be expected to fall, in order of frequency of occurrence, as follows:

1. Falling, slipping and tripping
2. Sprains and strains
3. Bumps and collisions
4. Cuts and burns
5. Miscellaneous

The areas in which these accidents occur are also given in their order of importance or frequency: (1) roads, sidewalks and floors, (2) highly inflammable and hot substances, (3) doors, windows and gates, (4) platforms, scaffolds and stairs, (5) elevators, (6) ladders.[1]

Accident prevention must be built into the building, which means being safety conscious during the planning stage. A few of the many items to consider in incorporating safety into the union building follow:

1. No steep grades or approaches to the building.
2. Few entrance steps. If necessary, locate them inside the building where they are protected from the weather.
3. Entrances protected from the weather with canopies. Heating coils for melting snow in cold climates.
4. No cross traffic patterns.
5. Automatic door locks, self-leveling devices and signals on elevators and dumb waiters.
6. Floors durable enough to withstand cracking or breaking in kitchens or equipment rooms.
7. Non-slip floors.
8. No difference in floor levels.
9. No more than twelve vertical feet to a staircase without a break.
10. Stairs at least forty-four inches wide with handrails on both sides (this also tends to encourage even wear of treads). Center rail in double stairways.

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[1] "Start Safety Plan During Institutions Blueprint Stage," Institutions Magazine, XXX (January, 1952), pp. 1, 41.

11. Non-slip nosings on stair treads.
12. No winding stairs.
13. Stairs well lighted with controls obvious and available at top and bottom and no distractions, such as bulletin boards, at the bottom.
14. Enough electric outlets, well placed, to prevent tripping over cords.
15. Polarized, grounded receptacles outdoors and in damp areas.
16. No dead-end or dark corners.
17. Good lighting throughout, with central or automatic control for outdoor lighting of approaches and other areas.
18. Equipment to eliminate strains and sprains from lifting, including use of mobile equipment and lift trucks, as well as proper storage facilities.
19. Outward-swinging doors from all meeting rooms and auditoria with anti-lock provisions on them.
20. Shatterproof glass in doors which swing into corridors or lobbies to permit vision.
21. Radius of swinging doors protected wherever possible to prevent collisions.
22. Full glass doors or panels marked to prevent attempted walk-throughs.
23. Hot areas such as coffee urns, radiators and pipes located or recessed to prevent burns.
24. Hot water supply automatically controlled to prevent scalding.
25. No porcelain handles on plumbing fixtures which might break, causing cuts.
26. Coat hooks and racks in eating areas above head level.
27. Coding of paint in work shops.
28. Proper identification of fire exits, extinguishers and alarm stations.
29. Diagrams of emergency shut-off valves for steam, fuel, sprinkler and other lines.
30. Segregation and marking of delivery and loading areas.
31. Adequate vehicular traffic facilities, including rainy night stopping.
32. Avoidance of sharp corners on all equipment and furniture.
33. Well-anchored carpeting.
34. Unobstructed passage area in all rooms, lounges or terraces.
35. Safe pedestrian approaches to building.
36. Established capacities for each room.
37. No more than fifteen seats between aisles in any hall.
38. Flame-proof textiles for draperies.
39. Large capacity ash trays and urns.
40. No outswinging windows or other projections on ground levels.

Structural Aspects

Elements of safety are incorporated in the building construction. The structure and contents preferably should be fire-resistive. Fire alarms and control systems should be incorporated in the structure, and heating plants and electrical installations should meet all safety requirements.

Lighting

Lighting is important not only because of its part in preventing accidents but also because it conserves the sight of those using the building, employees and patrons alike. Since people are most likely to fall over, step into or walk against objects they cannot see, corridors, stair wells, storage areas, utility rooms, receiving areas and similar places should be adequately lighted and controlled by easily accessible switches. Vapor-proof fixtures should be installed where humid conditions exist, such as showers or dishwashing rooms or kitchens.

Modern lighting practice attempts to produce a satisfactory visual environment. To do this, it must not limit itself only to the quantity of light but also must consider its quality, which involves direction, brightness-balance and light reflection. The American Standards Association recommends the amount of light to be cast in foot-candles in various areas as follows:

Most Difficult Seeing Tasks -- 200-1000
Very Difficult Seeing Tasks -- 100
Difficult and Critical Seeing Tasks -- 50
Ordinary Seeing Tasks -- 30
Casual Seeing Tasks -- 10
Rough Seeing Tasks -- 5[1]

Since the category of Ordinary Seeing Tasks includes normal office work (moderately fine detail over intermittent periods of time), and Casual Seeing Tasks occur in such areas as stairways, reception rooms, washrooms and active storage areas, it may be assumed that most of the union building's lighting should provide intensities of between ten and thirty foot-candles. Brightness-differences between visual tasks and adjacent areas should not exceed the ratio of one to three, and between the visual tasks and the periphery no more than one to ten. Consequently offices, meeting rooms and other union facilities which are used over long periods of time should avoid glaring work surfaces. Rostrums in front of bright windows or blazing light bulbs over billiard tables have no more place in union buildings than do dark reading rooms or shadowy offices.

Sanitation

The maintenance of proper standards of sanitation in a union operation is dependent to a large degree on the original installation of facilities. Plumbing and sewage systems must be properly designed and connected. Mechanical ventilation in toilet rooms and food areas, handy storage of cleaning equipment, efficient cooking, dishwashing and garbage disposal facilities, and proper cleaning tools are among the many elements to be considered during the planning stage.

Sound Control

Noisy areas and quiet areas should be separated if possible, with noises contained within their space of origin. Aside from the disturbing element introduced by such noises as the fall of bowling pins or a symphonic recording, constant subjection to such noises can affect the efficiency of persons nearby. Acoustic treatment such as acoustic tile or plaster, cork flooring, double glazing or sound insulation should be considered for each area.

Employees' Safety

The size of the building dictates to a great degree the number of employees hired. Some of these persons may be engaged in rather hazardous work, as in the kitchens and dishwashing rooms. Pin boys in bowling alleys, custodians who may have to move heavy objects such as pianos, maintenance men working with mechanized tools, and window washers using safety belts above the ground level are others exposed to potential occupational dangers. Proper safety devices on equipment, non-slip floors, correct tools and sufficient lighting are among the items to consider when planning on safeguarding the employees.

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[1] Leonard V. James, "Objective of Modern Lighting," Institutions Magazine, XXXV (December, 1954), p 58.

Healthful Atmosphere

Equated with safety is the maintenance of a healthful atmosphere. Those using the building should be surrounded by a healthful environment, including proper ventilation, heating and lighting. Persons spending their working week within the building require even more protection because of the protracted period of tenure therein. An ill-lighted meeting room is not apt to seriously affect the eyesight of the student who uses it three hours a week, but a typist working continually in her own shadow may easily develop eyestrain. The use of insecticides may prove harmless to the customers but deleterious to the kitchen help. A bookkeeper working near bowling alley pits which have not had proper acoustic treatment can be affected adversely by the noise which is satisfying to the bowler.

From a safety viewpoint, an ideal union building would be accident-proof, fireproof, panic-proof, sanitary, well-equipped, quiet overall (with noise confined to the proper areas), structurally strong, well-lighted and spacious. In nearly every instance, meeting these requirements is expensive. Exits, accesses, corridors and stairs represent loss of space and control. Safety devices such as alarms, riot lights, anti-panic hardware, sprinkler and other fire systems, handrails, non-skid stairs, controls on equipment and proper tools are costly; yet they must be installed, if not because of any moral implications then, usually, to meet local code requirements and to prevent future law suits. In the final analysis much of the safety aspect of the union building must be handled by the architect, engineer and other consultants. A safe heating plant with protected fuel storage, adequate boilers and hot water tanks, fireproof boiler-room walls and doors with a direct outside exit from this room, and safe room heating are matters for the experts to consider, as are the safety aspects of the electrical and plumbing installations.

APPEARANCE

As indicated earlier, the function and structures of college union buildings vary widely, even though their overall purposes are relatively similar. Obviously, the kind of building constructed bears heavily on the appearance of each, but certain principles might well be observed if the union is to function according to definition.

If a welcoming atmosphere is to be created, the exterior and interior of the building should induce it. "The living room of the campus" should reflect warmth. A massive entrance and stiff furnishings do not seem indicated but a homelike exterior and informal equipment may be. As architects and decorators can do much to create beauty and atmosphere without sacrificing efficiency, it is most desirable that they be given a statement informing them as to the effect desired from the building.

Architectural Style

Naturally, campus development plans consider types of architecture, and the union building usually is expected to fit into the architectural plan. This does not mean that it must be a duplicate of existing buildings.

> In the hands of capable architects, the new architecture need not clash with the existing work already on the campus for, by sensitive handling of materials, color and textures, a greater harmony with existing work can be brought to the campus than ever has been achieved before.[1]

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[1] L. B. Perkins, "Let's Design for Today," The Bulletin of the Association of College Unions, XV (March, 1947), p. 3.

> Harmony is no more dependent on duplication than balance is limited to symmetry. Growth and change are far more real and fundamental. No statically predetermined plan can be wise enough and farsighted enough to provide in detail for the entire future.[1]

A building need not sacrifice individuality or efficiency to the dictates of existing architecture nor need it jar the existing scheme of things to present the appearance desired of it.

Union buildings are frequently dedicated to the memory of war dead. Such memorials need not be monumental in appearance - their actual utility may be impaired — but rather planned to further the democratic functions of unions if they are to be most effective as memorials. To have the appearance of the structure consonant with its purpose would seem the truest form of commemoration, and the utilization of great pillars or marble fronts might be considered to detract from the overall effectiveness of the building.

Continuance of attractiveness of the outside of a building over the years is determined by many things. The ease of maintenance, such as window washing and painting, is of importance. Efflorescence of brick or discoloration of trim or other malfunctioning of materials should be considered. Grading, landscaping, sidewalk placement, location of service areas, parking facilities, future additions and buildings, and traffic patterns are some of the items which can affect the future appearance of a building.

Interior

The appearance of the interior of the union building is determined not only by its integral structure but also by color, lighting, decoration, furnishing and equipment. While the union building as a whole may be expected to express the campus living room idea, its individual internal components may differ quite markedly. Segregation of like activities assists in preserving a consistent appearance within the building and furthers the impression of hominess. Such areas as offices, stores, radio stations or theatres need not be representative of the overall building, yet their location and treatment should not detract from the effect being sought. Location of work and commercial areas away from main entrances and heavily used facilities help in maintaining the impression created by centrally located lounges, lobbies and display areas which have been designed to set the building tone. Needless to say, proper treatment of all areas is still necessary to maintain such tone. Thought devoted to overall building appearance when layouts are being completed helps to produce the attractiveness desired.

FUNCTIONALITY

A building should do the things expected of it, as should each of its component parts. Needless to say, the operation of the building as a whole is dependent upon the sum of all of its individual operations. Sacrifice of all or part of a function for some other reason appearance, fund raising, economy, poor planning — may affect other functions. Thus, failure to provide sufficient meeting space for groups may result in fewer persons using other parts of the building with consequent effects on revenue areas as well as on variety of programs. Inadequate storage facilities may cost hundreds of dollars a year extra in servicing costs. "More storage" is the recurrent plea by many union directors, particularly in conjunction with multiple-purpose areas such as ballrooms.

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[1] H. L. Kamphoefner, "What's Wrong With College Architecture?" The Bulletin of the Association of College Unions, XVI (May, 1948), p. 4.

A functional approach to planning is necessary if the building is to meet the needs of all students. The attitude of students toward the union building, while determined largely by the program offered, may depend to some extent on how well it serves its function. The quality of its appointments and atmosphere is important. Table tennis tables shoved into odd dark corners are the rule in most college living units, and duplication of such a situation in the union building is not apt to induce a preference for using its facilities. Drab meeting rooms, unattractive offices or unappealing food areas can limit the functioning of a union building as effectively as improper location or inadequate equipment. If, by definition, the union should function as "an informal educational medium for individual and group self-discovery and expression through a broad program of social and cultural recreation," then the quality and taste with which the building envelops the program determines much of its functionalism.

Furnishing a union building presents unique problems. In achieving "the living room of the campus" effect, some unions have utilized furnishings so fragile that students did not wish to use the building. The obvious weakness of furniture designed for homes, or even for hotels, lies in its lack of durability when used in union buildings. The usual furniture of bus terminals and other public spaces certainly does not offer the effect desired. Custom-built furniture, often no more expensive than stock items, can be designed to assure the best function of many areas. At any rate, proper furnishing and decoration are necessary to assure complete functionalism of any facility.

EFFICIENCY AND ECONOMY

As indicated previously, inefficient operation has cost unions thousands of dollars. The saving of dollars, important though it may be, is merely one aspect of efficiency, since efficiency is basically a measure of work accomplished in terms of energy expended. The economical side of efficiency deals primarily with dollars and is of prime importance to the administrators of any union operation, but it must not be stressed to the neglect of other phases of efficiency since it is notoriously difficult to weigh educational results with economic measures. Therefore, while economy might justify the elimination of a game room supervisor, his salary and his office, educational efficiency might dictate that such a person be included to assure the teaching of skills, inculcation of attitudes, elimination of gambling and maintenance of proper atmosphere.

Homogeneous Grouping

Common sense usually dictates homogeneous grouping of facilities. The connection of all food areas to permit centralized food preparation, dishwashing, delivery and storage is generally accepted, although dining areas, cafeterias and soda fountains may all be separated from each other. The desirability of segregating areas by function is underscored by the wish of union directors to operate at times only parts of their buildings, such as ballrooms, bowling alleys or guest rooms. Late-hour operations of student groups such as newspapers, yearbooks, radio stations or literary publications complicate closing procedures. Obviously, such partial operations require particular attention to the location of entrances, corridors and stair wells. The coordination and advising of student groups is much more efficient if their headquarters are close to each other, and much of the work of these groups is simplified by the resultant improvement in communication and elimination of duplication of effort. It is apparent that noisy areas like maintenance and game rooms should be separated from quiet ones like meeting rooms and lounges. Administrative offices should be as close to each other as is practical and communication between them by telephone or intercommunication systems easy.

While homogeneous grouping is indicated in many phases of the building, a scattering of facilities, usually of the service variety, makes for efficiency. Thus, rest rooms should be easily accessible everywhere, as should drinking fountains and telephones. Janitor stations should be conveniently placed to service all parts of the building. Small lounges and conference rooms in several locations may be justified in larger structures. Coat rooms should be located strategically to permit accessibility without wasteful supervision.

Transportation

Intra-building transportation is a problem in a structure as flexible as a union building. Folding chairs used to augment seating in various areas require moving as well as storage,and the same applies to folding tables. Lounge furniture oftentimes must be moved for dances or receptions. Pianos may present a real problem if their moving has not been anticipated. Hence trucks and dollies for storing and moving equipment, furniture and food are necessities if efficiency is to be achieved. Vertical transportation by means of dumbwaiters and elevators is an important consideration. Service elevators should be large enough to accommodate grand pianos,and some doorways ought to be wide enough to accept chair and table trucks.

Convenience

Convenience is one phase of efficiency. The thousands of people using union buildings should be able to do so without wasting their time in fruitless walking or searching. Traffic patterns should be direct and should not require crowds from theatres or dances to interfere with those in meetings or lounges. Elevators are indicated in larger buildings,and rooms should be well marked and easy to find. Building directories, easy to find and easy to read, are desirable. Information headquarters should be near the main entrance.

Maintenance

Efficiency for those who operate and those who use the building must not be stressed to the detriment of those who maintain it. Attention in the planning stage to such items as housekeeping requirements, minor and major repairs, upkeep of furniture and equipment and accessibility of plumbing, wiring and motors, saves time and money later. Central controls of ventilation, heating, air conditioning and lighting can result in real economies.

CHAPTER III

APPLICATION OF PRINCIPLES

Facilities and Activities

The diversity of facilities and activities of a union building makes their classification into a few major categories difficult. Norris has listed six broad areas -- Social, Intellectual, Game, Food, Activity and Service.[1] Such titles as "intellectual" and "activity" cover wide reaches of meaning and a functional approach to the classification, therefore, is used here. No particular brief is held for this method and in many cases it is honored chiefly by its breach. Nevertheless, there are some aspects of similarity of use, such as noise, service, or supervision, which appear to recommend it. The eight classifications include:

1. Administrative, service and maintenance
2. Food
3. Quiet
4. Theatre
5. Hobby
6. Games
7. Outdoor
8. Miscellaneous

Insistence on rigid separation of activities into areas is, of course, fruitless. Thus, listening to records or working on the college newspaper are hobbies which might well take place in the quiet area,and a bridge tournament held in the main lounge would defy cataloging, involving as it does a quiet hobby which is a game.

Based upon Wolf's study of 1951,[2] a list of activities housed in or adjacent to the union building includes (as Table 1):

TABLE I

LIST OF UNION ACTIVITIES

1. Informal chess and checker playing
2. Informal card playing
3. Acquaintance party for freshman
4. Informal table tennis playing
5. Special celebration dances
6. Bridge tournaments
7. Magazine reading
8. Table tennis tournaments

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[1] Will V. Norris, "Responsibilities of Planning Committees," College Unions - 1947. Report of Proceedings of the Twenty-fourth Conference of the Association of College Unions (1947), p. 19.

[2] Andrew G. Wolf, "Basic Designs for College Union Activity Programs," College Unions - 1952. Report of Proceedings of the Twenty-ninth Conference of the Association of College Unions (1952), pp. 23-28.

9. Regular evening date dance
10. Student-faculty coffee hours
11. Open house (students, faculty, alumni, high school students, parents, others)
12. Folk and/or square dancing
13. Informal billiards playing
14. Intercollegiate bridge tournament
15. Record listening
16. Sports movies
17. Photography exhibits
18. Matinee dances or mixers
19. Social dance instruction
20. Art exhibitions (student, private, travelling)
21. Variety shows
22. Regular evening dateless dances
23. Publication of all-campus calendar
24. Recognition dinner for Union committees
25. Orientation for freshmen in Union activities
26. Holiday parties
27. Record concerts
28. Cabaret dances
29. Square and/or folk dance instruction
30. Campus billiards tournaments
31. Chess and checker tournaments
32. Regular showing of feature films (35 & 16 mm.)
33. Newspaper reading
34. Orientation for freshmen in campus activities
35. Book auctions
36. Scribblers Club
37. Placement bureau
38. Poster-making
39. Style show or fashion tea
40. Organized training for Union committee members
41. Occasional "name-band" dances
42. Intercollegiate billiard tournaments
43. Special interviewing session for Union committee applicants
44. Organized training program for Union committee chairmen
45. Group singing
46. Guide service for campus
47. Lectures
48. Talent recruiting agency
49. Bazaars or carnivals
50. Old-time movies
51. Informal bowling
52. Camera Clubs
53. Union reporting service
54. Billiard instruction
55. Intramural bowling leagues
56. Special concerts (symphony orchestra, etc.)
57. Practice pianos and music rehearsal
58. Costume dances
59. Coffee forums
60. Public forums or discussions
61. Informal discussions fostering student-faculty relations
62. Faculty bowling leagues
63. Crafts
64. Book talks and reviews
65. Men's stag or smoker
66. Chess and/or checker instruction
67. Graduate student parties
68. Check out of books and magazines overnight
69. Drama performances
70. Organized training sessions on group leadership (campus-wide)
71. Series showing of contemporary foreign films
72. Swim parties
73. Union newspaper publication
74. Hikes (walking, bicycle, etc.)
75. Fun day or fun night
76. Children's parties
77. Intercollegiate chess and checker tournaments
78. Instruction in crafts
79. Radio Club
80. Picture lending
81. Hobby exhibits
82. Winter carnival
83. Swing (Jazz) record hour
84. "Name-band" orchestra concerts
85. Job opportunities conferences
86. Intercollegiate bowling tournaments
87. Town Hall type forum series
88. Nationality nights or weeks
89. Overnight camping
90. Picnic equipment lending
91. Swimming
92. Film series for planned educational objectives
93. Outdoor summer concerts
94. Organized training sessions on correct social customs
95. Married students' parties.
96. Bowling instruction
97. Table tennis instruction
98. Lectures on art
99. Toastmaster Club (training for public speaking)

100. Outdoor movie programs
101. Training for poster-making (design, process, etc.)
102. Sailing
103. Song tournaments
104. Organ concerts
105. Coffee hour - faculty only
106. Instruction for hosts and hostesses
107. Roller skating parties
108. Film forum and discussions
109. Major concert artist series
110. Performances by traveling theater, ballet, and opera companies
111. Intramural table tennis league
112. Training in making party decorations
113. Sales outlet for student arts and crafts work
114. Mock United Nations sessions, trials, etc.
115. Ski rental
116. Ski tournaments
117. Archery Club
118. Folk singing
119. Individual vocational counseling
120. Television shows
121. Stamp Club
122. Youth hostel trips
123. Dance recitals
124. Hostessing service for non-campus groups (i.e., U. S. O., etc.)
125. Noon Hour movies
126. Jam or jazz sessions (live)
127. Ride or travel bureau
128. Management of regional or state art competitions
129. Riding Club
130. Sailing instruction
131. Toboggan rental
132. Sheet music library
133. Instruction in stagecraft, lighting, etc.
134. Shuffleboard
135. Radio forums
136. Ice skating cabaret
137. Golf instruction
138. Series of travelogue films
139. Music festivals
140. Laboratory playwriting and play production
141. Play reading group
142. Radio play production
143. Date bureau service
144. Graduate student coffee hours
145. Canasta lessons
146. Horseshoe pitching
147. Badminton
148. Model Airplane Club
149. Christmas decorating party
150. Street dances
151. Rifle and Pistol Club
152. Ice skating
153. Choral group
154. Informal radio shows
155. Union opera
156. Language tables
157. Bicycle rental
158. Horse show
159. Puppet shows
160. Freshman handbook publication
161. Glee Club
162. Campus auction
163. Special dances
164. Gift wrapping clinic
165. Modeling lessons
166. Homecoming breakfast
167. International Club activities
168. State parties
169. Student parade
170. Production and sale of records
171. All school picnic
172. Senior barbecue
173. Union board alumni banquet
174. Overseas aid dinner
175. Freshman camp
176. Transfer students tea
177. Wives' night out
178. Croquet Club
179. Pinochle tournament
180. Tiddlywinks tournament
181. Cribbage tournament
182. Railroad Model Club
183. Ceramics Club
184. Conferences and conventions
185. Debating
186. Sports forum
187. Steak fries
188. Casting Club
189. Fencing
190. Golf tournaments
191. Mountaineering Club
192. Club movies
193. Barbershop quartet contest
194. Faculty variety show
195. Theatre coffee hours
196. Recognition picnic for Union committee
197. Poetry reading
198. Vesper services
199. Sewing lessons
200. Painting

201. Musicales
202. Recreational reading
203. Photography
204. Record lending service

Using Table 1 as a point of departure, the possible contents of a union building are listed in Table 2. The activities and organizations best suited to each facility are listed by number after it.

TABLE 2

CLASSIFIED FACILITIES TABLE

Administrative, Service and Maintenance

Offices	23, 40, 43, 44, 48, 53, 68, 73, 90, 113, 122, 127, 132, 143, 149, 160, 170, 190
Check and coat rooms	
Information center	23, 46, 48, 68, 90, 113, 122, 124, 127, 132, 143, 157, 170, 203
Bookstore	113, 170
Non-union offices	37, 85, 119, 127
Ticket office	
Barber shop	
Beauty shop	
Post office	
Maintenance shop	90, 115, 131, 157
Lobby	1, 3, 15, 17, 20, 34, 45, 49, 113, 120, 124, 127, 159, 162
Western Union office	
Shops	113, 170
Lost and found	90, 127, 132, 157, 162
Duplicating area	
Rest rooms	
Janitorial spaces	
Bulletin boards	
Bank	
Delivery area	
Trash rooms	
Elevator	
Mechanical rooms	
Storage	90, 115, 131
Employees lockers and rest rooms	
Pay telephones	
Corridors	17, 20, 81, 128
P-A system	

Food

Soda fountain and grill	1, 2, 3, 22, 26, 28, 49, 75, 76, 113, 125, 126, 135, 162, 177
Cafeteria	3, 5, 6, 12, 24, 26, 88, 156, 162, 166, 174
Private dining rooms	24, 67, 88, 99, 106, 156, 166, 173, 174
Service dining rooms	6, 10, 17, 24, 88, 95, 156, 162, 166, 174
Coffee shop	3, 22, 28, 49, 75, 88, 95, 113, 125, 126, 135, 156, 162, 166, 177
Faculty dining room	6, 24, 67, 88, 106, 113, 174
Commuters' lunchroom	1, 2, 6, 10, 156, 162

Women's dining room	6, 10, 88, 99, 106, 113, 156
Banquet room	3, 5, 10, 16, 17, 24, 27, 29, 49, 60, 65, 88, 99, 125, 166
Offices	90
Kitchen	90
Dishwashing room	
Garbage room	
Refrigeration room	
Trash room	

Quiet

Meeting rooms	6, 10, 14, 16, 17, 19, 20, 25, 29, 31, 32, 33, 34, 40, 43, 44, 47, 49, 50, 60, 64, 66, 70, 71, 77, 85, 87, 92, 94, 98, 99, 108, 114, 118, 120, 123, 125, 135, 138, 159, 162, 163, 177, 184, 185, 186, 192, 200
Lounges	1, 3, 5, 6, 7, 10, 14, 15, 16, 17, 18, 20, 22, 25, 26, 27, 31, 33, 35, 39, 45, 47, 49, 59, 60, 61, 64, 66, 67, 70, 77, 81, 83, 85, 94, 95, 98, 105, 106, 119, 120, 128, 135, 141, 144, 149, 159, 163, 168, 176, 177, 184, 195, 197, 198, 201, 202
Music listening room	7, 15, 17, 20, 27, 33, 35, 64, 68, 83, 177, 197, 201, 202, 204
Library	1, 7, 10, 15, 20, 27, 33, 64, 68, 77, 177, 202, 204, 17
Guest rooms	
Dormitory	
Chapel	104, 167
Other faculty space	105
Commuters' lockers	
Box lunch lockers	
Commuters'sleeping rooms	
International center	3, 7, 88, 167
Student activities area	36, 40, 43, 44, 48, 53, 70, 73, 101, 117, 121, 122, 129, 130, 143, 149, 160, 178
Student organization offices	36, 40, 43, 44, 48, 53, 70, 73, 101, 117, 121, 122, 129, 130, 143, 149, 160, 178
Art room	17, 20, 80, 81, 98, 128, 159

Games

Table tennis room	3, 4, 8, 26, 75, 95, 97, 111, 124, 177
Cardroom	1, 2, 3, 6, 14, 26, 31, 66, 75, 77, 95, 124, 145, 177, 179, 180, 181
Billiard room	3, 13, 26, 30, 42, 54, 75, 95, 124, 134, 177
Bowling alleys	3, 26, 51, 55, 62, 75, 76, 86, 95, 96, 124, 134, 177
Chess room	1, 6, 26, 31, 66, 75, 77, 95, 124, 177

Hobby

Photographic studio	17, 25, 34, 38, 52, 81, 203
Art shop	17, 25, 34, 38, 81, 98, 101, 112, 128, 149, 159, 163, 165, 183, 200
Craft shop	25, 34, 38, 63, 78, 81, 101, 112, 128, 148, 149, 159, 163, 164, 165, 183, 199
Outing club headquarters	25, 34, 74, 81, 89, 90, 102, 115, 116, 122, 129, 131, 152, 157, 158, 191
Amateur radio transmitter	25, 34, 79, 81
Lending art library	25, 80, 204

Theatre

Auditorium	3, 16, 21, 25, 26, 32, 34, 39, 45, 47, 50, 56, 60, 65, 69, 71, 75, 76, 84, 87, 88, 92, 103, 104, 108, 109, 110, 114, 118, 123, 125, 126, 133, 135, 138, 139, 140, 153, 154, 155, 159, 161, 167, 177, 184, 185, 192, 193, 194, 198, 201
Stage	3, 21, 26, 32, 39, 50, 56, 65, 69, 71, 75, 76, 84, 87, 88, 92, 103, 108, 109, 110, 114, 118, 123, 125, 126, 133, 135, 138, 139, 140, 141, 153, 154, 155, 159, 161, 167, 177, 184, 185, 192, 193, 194
Dressing rooms	39, 69, 84, 109, 110, 133, 139, 155, 194
Shops	69, 98, 101, 133, 140, 155, 194
Lobbies	6, 10, 14, 15, 17, 20, 22, 27, 49, 69, 75, 81, 84, 87, 109, 110, 128, 133, 139, 155, 194, 195
Projection booth	26, 32, 50, 69, 71, 108, 110, 125, 133, 138, 139, 140, 155, 192, 194
Stage house	69, 110, 133, 139, 140, 155, 194
Costume shop	69, 133, 140, 155, 194
Costume storage	69, 133, 140, 155, 194
Rehearsal room	3, 27, 47, 61, 69, 85, 98, 118, 123, 133, 140, 141, 153, 154, 155, 159, 161, 184, 185, 193, 194, 195, 200
Ticket office	
Offices	

Outdoor

Cement slab	3, 4, 5, 9, 12, 18, 22, 25, 26, 28, 29, 33, 39, 45, 47, 49, 50, 56, 58, 65, 71, 75, 76, 82, 83, 84, 93, 95, 100, 103, 107, 108, 109, 118, 124, 126, 137, 138, 155, 159, 162, 163, 167, 168, 169, 171, 172, 186, 188, 189, 201
Sun decks	1, 4, 7, 27, 33
Picnic areas	26, 34, 76, 82, 124, 159, 168, 171, 172, 187, 196
Games	4, 26, 75, 76, 82, 124, 137, 140, 147, 168, 171, 172, 178, 186, 188
Parking	12, 82, 107, 150, 163, 169

Miscellaneous

Ballroom	3, 4, 5, 6, 8, 9, 12, 16, 17, 18, 19, 20, 21, 22, 25, 26, 28, 29, 32, 34, 41, 45, 47, 49, 50, 56, 58, 60, 65, 67, 71, 75, 76, 84, 87, 88, 92, 94, 103, 109, 114, 118, 123, 124, 125, 126, 128, 137, 138, 139, 155, 159, 162, 163, 167, 168, 184, 185, 186, 188, 189, 193, 194, 201
Music recital room	10, 14, 15, 17, 21, 28, 34, 57, 60, 61, 64, 83, 88, 104, 118, 123, 126, 132, 141, 153, 159, 161, 168, 170, 177, 193, 200, 201
Music practice room	14, 15, 57, 132, 141, 153, 161, 193, 200, 201
Television room	10, 15, 16, 17, 27, 33, 76, 120, 202
Convention hall	3, 5, 6, 16, 17, 21, 25, 29, 32, 34, 45, 47, 49, 56, 60, 71, 75, 87, 92, 103, 114, 118, 123, 126, 137, 159, 184
Swimming pool	26, 72, 75, 76, 91, 95
Ice skating rink	26, 75, 76, 82, 136, 152, 95
Cooperative grocery	
Ski slide	26, 82, 115, 116, 131

Non-Union

Campus newspaper	34, 160
College yearbook	34, 160

Student government	34, 160, 170
Student radio station	34, 135, 142, 154, 170
Student amateur radio club	34, 79
Religious advising	34
Outing club	34, 74, 89, 102, 115, 116, 122, 129, 130, 152, 157, 158, 191
Others	36, 117, 121, 127, 129, 130, 151, 158, 182, 191

In this manner, a functional analysis of the union building is obtained. Application of the planning principles, previously delineated, to each facility outlines the requirements of each. Thus, some fifty-six functions, many of them similar, are listed as possible activities for the lounges, and even such an inflexible area as a billiards room can be the scene of eleven activities, all of which are very closely related. Far from definitive, the table merely indicates the type of program which can fit into each area. Much of the duplication of function which occurs among areas is caused because all facilities are not likely to be found in any union building with the result, for example, that the ballroom or meeting rooms of a theatreless building may assume many of the functions which are best performed in the theatre. Conflicting events also demand alternate expedients, such as showing motion pictures in a large meeting room on dress-rehearsal night or holding a club meeting in a rehearsal room on an evening when meeting rooms are at a premium. Table 2 does not exhaust the flexibility of use by any means. Obviously the small building without cardroom, chess room and ballroom can use its lounges for many of the events listed for those areas. The success and attendance (not necessarily synonymous) of various programs also determine their locations, so that an exceptional music recital might well be held in the theatre while a bridge tournament might never require the use of the ballroom.

Not all of the facilities mentioned are discussed here. Some, such as cooperative groceries or ice skating rinks, occur so seldom in connection with unions that they can scarcely be considered as union facilities. Others -- bookstore, faculty space, hotel unit, swimming pool, university administrative offices, beauty and barber shops, or chapel -- are facilities about which there is widely varying opinion and are usually justified only by local circumstances. Such facilities are omitted or mentioned quite cursorily, as this book is not intended to exhaust all the possible components of a union building.

Administrative, Service and Maintenance Areas

A glance at Table 2 reveals that union program activities as such are infrequently held in most of these facilities. The program potential of the barber shop and check rooms, for example, is not very high. Closer examination of the table shows that nearly all of the activities are in the nature of services and most of them, in all probability, are performed by paid staff members. If the union board has its offices located away from the administrative offices, the function of staff members is even more pronounced, since many of the services rendered, such as interviewing and training union committee applicants or operating a talent agency or a date bureau, are carried on in the student offices.

The specialization of many of these areas emphasizes the need for organizational planning. The experts and the consumers together can pool their ideas on many of the service areas, among which would be the bookstore, ticket office, barber and beauty shops, post office, Western Union offices, rest rooms and bank. Perhaps the rubbish collector can give some excellent advice concerning the trash room, and it is nearly certain that both students and faculty have ideas concerning the bookstore, at least some of which should prove valuable.

Offices

Expansibility -- As the union building grows it usually expands laterally unless it originally included vacant space. Some of the facilities are more adaptable to moving to new quarters than others. Thus offices, ticket office, lost and found, bulletin boards and storage rooms may be transferred rather easily to new quarters while a bookstore, post office, barber and beauty shops, maintenance shop, rest rooms, elevators and janitor closets require utilities, plumbing or equipment which would indicate that enlargement rather than removal is to be desired. Other areas, by their very function, need to be in certain locations. Thus, a lobby-entrance-coat room-information center combination must be located where it can serve its purpose best, probably in the center front of the building. More than one such combination is possible in a large union building and may well be planned for in a future wing, particularly should such a wing include a theatre and/or guest rooms. It is safe to say that, given decent heating, ventilation, lighting, noise control and location, offices can be moved during an expansion period more easily than almost any other area except storage. This should not be taken to mean that any vacant closet or under-stair space can be allocated as office area, but merely that the physical requirements are more flexible than those of some others. Perhaps one or more meeting rooms or lounges near the initial office section can be earmarked for additional offices during an expansion, which would almost of necessity include more meeting rooms elsewhere.

Function -- While Table 2 includes most of the program activities peculiar to unions, it makes little mention of the functions usually carried on in all administrative areas. Thus, in the offices such normal tasks of typing, billing, accounting, filing, telephoning, computing, record-keeping, reception, dictation, conferring and thinking occupy the major part of the working day. Basically, an office consists of one or more work stations, the work requirements of each station often varying considerably from the others. The space requirements for each work station or position varies with the job requirements. A formula which might assist in allocating space for office area, originally prepared for business management but applicable to much of the union's work, suggests adding all the private office space requirements plus the general office space requirements to the spaces not occupied by persons actually at work -- reception room, stock room, file room, and storage -- and increasing this total by ten to fifteen per cent for circulation or traffic.[1] The same source recommends private offices' requirements by classifications as follow:

400	square	feet	Senior Executive
310	"	"	General Managers, Department Heads
220	"	"	Senior Assistants
130	"	"	Junior Assistants
80	"	"	Inside Cubicles (working station with partial wall)

Determination of where in the foregoing various administrators of the union would fit depends largely upon the local situation. Perhaps an office twenty-foot square seems large for a union director, yet, as he and his co-workers are dealing almost exclusively and directly with people, the union offices must not be permitted to be reduced to the stage where they are crowded when used normally to receive students, faculty, alumni and visitors. At the risk of seeming pretentious when compared with other administrative offices on campus, it seems worthwhile to adhere rather closely to the recommended square footage, equating the union director with the senior executive and so on down the scale.

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[1] "How Much Space Per Person?" The Integrated Office, Management Magazines, Inc. (Fall 1953), p. 6.

For routine clerical areas, such as accounting and stenography, 75 to 85 square feet per working position are recommended, a working position being a single clerical chair and desk. Stations requiring more than this -- a filing tub, for example -- need a corresponding increase in space allocation. Each working position, it is assumed, is allowed no more than 1 1/2 lineal feet of files and storage. If additional files are required (as for student organizations), 5 to 7 square feet should be allocated for each.

Flexibility -- Flexibility may be gained through both equipment and building planning. Modern business office techniques have applications for the union office spaces. Modular office furniture which consists of various standard size tops designed to be assembled with any of a variety of bases offers almost unlimited combinations for office growth and change. This furniture, combined with movable wall partitions, permits an amazing flexibility. Its cost is not much higher than conventional equipment. Use of such furniture and partitions in one large office area might permit nearly all of the activities listed in the table after offices centered in that one spot. If students are to use an area in place of a separate student activities center, the inclusion of a large work surface for such functions as duplicating, counting tickets or change, addressing envelopes or any of the other many tasks which confront students engaged in student activities is recommended. Folding or movable partitions separating this section from the office proper would assure less confusion.

Much the same sort of arrangement can be made for administrative offices of the union, except that some executive desks, filing cabinets and work areas may be of a more permanent nature to suit the desires of full-time personnel. Separation of private offices by conventional walls will probably be desired to afford more privacy and quiet, yet if these are not bearing partitions they will still permit easy changes and adjustments at a later date. Much of the work of the staff members of the union requires work with other people, singly or in groups, and the assignment of conference desks where indicated permits the various offices to double as small, informal conference rooms.

Separate access to offices is advisable as it prevents traversing the length of the reception-work part of a suite at the expense of those working therein to reach another office. Such access also permits the closing of certain offices during the evening or vacation periods while using others.

Safety and Health -- Office lighting planned to fit into a flexible scheme provides an even level of light throughout the area rather than focusing spots of light on previously planned locations, the latter course prebuilding a rigidity into the structure which can be eliminated only by future electrical changes. With long fluorescent lighting elements and over-all diffusing ceilings now available, well-spread illumination can be provided in all corners of the office.

Lighting has an important effect on health and safety as well as on efficiency, functionality and appearance. Evidence exists to indicate that at least a five per cent increase in office worker efficiency can be obtained with proper lighting and color arrangements. Fluorescent lighting can provide good light distribution with substantially less wattage than required for incandescent lighting, generates less heat and requires lamp changes much less infrequently, thus producing more efficient and economical operation despite higher initial installation costs.

The absence of eyestrain is important to the health of persons using the office areas. Most intensive office work requires about fifty foot-candles of illumination at the working level, but some private offices and conference rooms may get by with only thirty. In addition to the quantity of light available, such items as brightness-balance, glare and reflection must be considered in the planning of the office. Fatigue from nervous and muscular tension and extra expenditure of energy can result from poorly lighted offices.

Safety in offices demands, among other things, room for maneuverability. Accent on space-saving tends to pigeonhole office work, so that each person operates within a defined area which includes just enough room for a chair to be moved backwards so that its occupant may disengage himself when necessary. The diversity of union functions make such specialization difficult except in the largest of the business offices. The traffic which streams through most of the administrative offices demands enough margin of room to eliminate tripping over swivel chair bases and wastebaskets.

Ample storage space for offices is a requirement not only for efficiency's sake but also to meet the demand for a place to "put things" temporarily. Tops of filing cases and bookcases too often are depositories for such items as books, scissors, typewriters and the like, which become prime targets for dislodgement to the hazard of those seated below.

Highly waxed floors, sharp cornered desks, rough chair legs, unstable chairs, faulty chair casters, top-heavy filing cabinets, wall-hung cupboards with swinging doors and glass doors on book cases are some of the hazardous elements in offices. Chairs with flared or swept-back legs make "teetering" on the back legs more difficult and may protect walls from being marred by the chair backs. These deserve consideration as side chairs, particularly if these offices are used very much by men students.

All drawers and doors in cupboards and filing cabinets should work easily. Flammable duplicating and other fluids should have safe storage facilities. Typewriter stands and drawers should be sturdy and all business machines well anchored. Doors should open into the office without encountering obstructions, particularly chairs.

An office staff should be housed in an area well ventilated, free from drafts and relatively noise-free. As such offices may be manned during the summer months while the rest of the union building is closed, air-conditioning should be considered for them. Naturally, if the building as a whole is air-conditioned, the offices are too.

Appearance -- The appearance of the office areas is as important as that of the more public spaces. At least some of the offices are visited by a number of people each day and attractiveness assists transacting business in pleasant surroundings. The effect on staff morale certainly demands consideration and a highly functional office utilizing the colors and designs now available in equipment can demonstrate that beauty and utility live well together. Effective wall and ceiling colors can do much to brighten any area and can modify its apparent dimensions. Works of art are certainly appropriate for areas in constant use.

If modular furniture is chosen with the idea that it may be used throughout the building as requirements change, then its color should be the same to permit interchanging of components. It should be neutral enough to fit into almost any color scheme which may be encountered. The lighter shades of gray, tan and green of machines and equipment enable these to blend with their surroundings, thus eliminating fatiguing color contrast.

While expert color advice should be sought throughout the building, a few general principles for office areas should be remembered. Rooms lighted by north or east light are receptive to warm colors, while cool colors are best suited for rooms lighted from south or west. Walls containing windows should be light-colored, while walls opposite them can be darker. Strong natural light can be partially modified by using different colored walls. Work areas should avoid strong, bright colors and heavy contrasts, striving to provide restful surroundings for those working in such areas for prolonged periods. The lighter, more neutral walls should face workers; the more deeply colored ones can be located behind them.

Efficiency and Economy -- Planning of the office areas should permit a future moderate expansion of staff and records so that within a few years one does not find a clutter of additional filing cabinets, reams of paper and other materials detracting from a once attractive office. Such an expansion should be able to take place within the confines of the original, as normal growth demands more room, if only for additional filing cabinets.

The function of the union offices varies with each administrative system and physical plant. If all student activity monies are handled here, then safes, record storage, counters and reception areas are required. The degree of financial control exercised by the central business office determines the number of business machines, safes, records and bookkeeping stations which are needed. If bookstores, cafeterias, guest rooms, shops, post offices, banks or other commercial undertakings are part of the union operation, they require offices designed to meet the functions peculiar to themselves. The degree of decentralization practiced by the union determines the extent to which these departmental offices will be independent. Obvious savings in terms of equipment and staff can be achieved if much of the business operation is carried on in a central location.

Should student offices not be sufficient to meet the needs of the campus, the union offices should be prepared to assist. In this instance the union files are from time to time used by other organizations. Duplicating equipment is made available. Tickets and money require counting and informal conferences are carried on. Proceeds from evening functions are locked in the safe or change picked up. Certainly members of the union board and committees are around much of the time. While such a situation is apt to be confusing to the extent where separate activities' offices (other than those permanently assigned to organizations) become a necessity, a union staff interested in working with students will find much to be said for the arrangement.

As a partial solution for unions unable to allot as much student office space as might be needed, it is suggested that a large work table (or combination of tables) be made available around which students can work, plan, run off notices, count money, number tickets, roll change or cut stencils. This table or bench is also of value to the staff whenever it finds the need to perform similar operations or to expand its staff with student or temporary workers to meet the recurring emergencies of union work.

The size and kind of a union building being erected does much to determine the amount of decentralization which occurs in the offices. In a small building containing a soda fountain, game room and lounge of moderate size, one office, strategically located, could be used to service them all, including issuing of equipment and supervision as well as the more usual administrative functions. A large building would undoubtedly require separate office spaces for its food section and at least a sizable control area for its game room. Some functions such as record-keeping and issuing of equipment (books and magazines) are carried in the browsing rooms of larger union buildings, while similar functions are performed in smaller buildings from a central office.

Whether specialized offices accompany their specific areas depends upon local organization, staff, budget and business procedures. The advantages of having the bookstore manager's office adjacent to the store are obvious. The same applies to the games and food managers, but it need not apply to the business manager or social director. The hour-to-hour presence of staff members for such purposes as supervision, order taking, ordering and receiving supplies, keeping books and records appears to be the chief reason for locating the office in the immediate vicinity. If supervision is a prime function of the occupants of an office, ample fenestration is recommended to permit easy observation. Some privacy might be obtained by the use of one-way glass but the effect of this "spying" on employee and student morale might do much to destroy the permissive atmosphere so desirable in a union building.

The grouping of offices together in so far as is possible has much to recommend it. It makes for a feeling of staff unity and solidarity and permits easier exchange of information. It makes possible more efficient use of office machines, equipment and personnel. It enables doubling up on tasks during such periods as absences caused by illness, vacation or job termination, as well as consolidation of tasks into one job which otherwise might be handled haphazardly or by part-time help. A central filing repository approaches a reality and administrative control becomes easier. As most of the key people on a union staff operate out of offices, an ideal situation, administratively, might exist if all the offices were combined into one suite in the center of the building with the various enterprises and facilities adjoining. Such physical limitations as different floor levels, delivery areas, corridors and fenestration make this centralization highly impractical, but a commonsense approach in that direction is recommended.

Those office areas which are segregated because of their specialized function should have communication facilities, such as telephone or inter-communication system, with the other offices and should be placed where they can be as flexible in function as possible. A receiving office and stock clerk's office might adjoin, if they are not the same, and be contiguous to the supervisory office to permit doubling up of assignments during times of emergency. Scattered offices may mean too many employees or a reduction of services and so the tremendously long work week of the union should be kept in mind when outlining a plant requiring a definite number of work positions.

It is unwise to plan areas first and then assign a spare corner as office space. For example, proper location of a games office control desk at Kent State University might have saved at least three thousand dollars per year in salaries paid to supervise the bowling alleys there, since the man assigned to the billiards and table tennis rooms also could have supervised much of the bowling, had he the proper physical arrangement.

The layout of the office spaces does much to make for efficiency. If several private offices are together, such as the offices of the director, business manager, social director or non-union persons, the use of a secretarial bay with two or more secretary-receptionists becomes possible. With two secretaries together, one can always be available during relief or lunch periods. In the work offices each working station or position is supplied with the tools needed for its proper operation and is near those to which it has frequent recourse. Time loss and fatigue resulting from constant trips to filing cabinets, adding machines or telephones is eliminated by such an arrangement. The daily salary investment represented by each employee warrants protection through the provision of telephone extensions, good typewriters and other equipment when needed. The additional expense is usually quite small in comparison with the per hour cost of not using proper tools.

Coatrooms

Checking--Perennial Union Headache,[1] as the title of a survey report, indicates the size of the coat storage problem, a problem multiplied at "commuter" colleges by box lunches and textbooks.

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[1] G. Ray Higgins, "Checking--Perennial Union Headache," Bulletin of the Association of College Unions, XVII (October, 1949), p. 8.

> As far as can be determined, no union has found an entirely satisfactory solution to the situation. Check rooms with attendant staff are expensive to operate, must be centralized, and thus meet resistance among students against using the facilities. Those who have tried charging a fee for casual daytime service have reported discouraging results. Self-service plans are subject to breakdown when thefts become too frequent. Lockers in great number require an excessive amount of space and present difficult administrative problems.[1]

As indicated in the preceding quotation, a single central checkroom is not likely to be patronized, as it cannot service all areas of the building adequately. Coat rooms scattered strategically throughout the building can better serve their purpose, but operating such rooms on a checking basis is usually prohibitive in terms of payroll. If sufficient coat areas are not provided, lounge and other seating are used as clothing depositories, resulting in a loss of seating capacity and attractive appearance. The recurrence of the cloak problem as a discussion topic at nearly each regional and national conference, along with the rather desperate measures of some unions using pages to pick up garments and the institution of a fine system, are further evidence of the magnitude which can be assumed by a routine administrative problem.

Perhaps the best solution for this problem is a rather generous disposition of self-service coat rooms throughout the building with special attention to the larger halls and rooms. Equipped with half doors and with tables and not directly in traffic lanes, these coat rooms can be used as check rooms when the occasion warrants, if the original equipment is purchased with numbered racks and tags. Thus, the steady hour-to-hour use of coat rooms can be conducted on a self-service basis while the pressure which occurs before and after such special events as dances, shows and banquets can be relieved in orderly fashion by checking attendants. Portable checking equipment can also be used to transform meeting rooms, lounges or corridors into temporary check rooms during the peak hours which accompany special events, providing such peak hours do not occur frequently enough to interfere with the original purpose of the facilities. State legal variations concerning liability for articles checked and left, as well as those covering lost and found departments, make individual investigation into these matters advisable.

Space allowances for self-service coat rooms should approximate one and one-half square feet per person. Racks should allot four lineal inches to each person. While hat racks may not be much used on a college campus for their original purpose, they do serve to hold books between classes. Whether the coat hangers used should be anchored to their racks despite the awkwardness which results should be determined by the amount of pilferage anticipated. Some evidence seems to exist that square identification tags are returned more often than round ones which, feeling like half-dollars in pockets, are carried from the building without the reclaiming of the property. If coat rooms are to be used as check rooms they should be fairly shallow to expedite service, arranged throughout the building in numerical sequence and properly labelled to eliminate the wandering of attendants and patrons in search of rooms which correspond with specific checks. Some space should be devoted to storage of umbrellas and rubbers as well as bulky packages. Commercial firms selling check room equipment usually offer free architectural assistance in the layout and equipment of the areas, but some caution should be observed to avoid more expensive installations than are needed.

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[1] Ibid.

Information Center

Except in the largest union buildings, the information center is probably the most flexible service area in the building. Because manning such a single-function area throughout all the union operating hours is expensive, most unions cannot afford an information center unless it works in conjunction with services other than that of dispensing information. In addition to the listed activities with which an information center can assist, the staff or students who man it may help in checking coats, typing, telephone answering, selling tickets, running the lost and found service or the building switchboard, operating a duplicator, issuing equipment or performing any of a number of other routine tasks. To permit such diversity of occupation, the information center must be near or adjacent to the check room, lost and found bureau, office, ticket booth, browsing or music room, or whatever other areas are concerned. Some of these areas -- ticket booth, lost and found -- may be incorporated into the information center. In the smaller union buildings the center may merely be the office, cigar counter or other centrally located service facility. In others it may be a separate area which serves as the nerve center of the building throughout the week, a place where change is made, reports filed, complaints registered and from which general supervision, chaperonage and responsibility emanate. To fully succeed, an information area should be located near the main entrance of the building. At least one college (Wisconsin) union has operated an outdoor curbside information booth for the campus as a whole. Few unions consider this a normal union function although it does serve to point out the diversity of the college union.

Naturally, the equipment of an information center must include the items necessary for its operation. A telephone, campus and town or city directories, street and highway maps, bus, airline and rail timetables are among the minimum equipment of the center. Racks or other compartments are required and room for more should be available as the service receives additional demands. Because the building is used by many persons unfamiliar with the campus, such as freshmen, visitors, convention members, parents and others, it is quite likely that the information center acts, officially and unofficially, as the main source of information. This is doubly true since it is open for so many hours and is, ideally, located at the center of campus activity. Campus maps, fliers and college catalogues are often distributed here. Daily and weekly activity information should be available and a locator file or up-to-date student-faculty directory is a definite asset. Existing information centers, such as campus police headquarters and telephone switchboards, can advise planners on the range of information desired and the tools useful in obtaining it.

If the information center is also a collection point for such endeavors as an all-campus calendar, a talent recruiting or travel bureau, or a registration center for trips, tournaments, parties or other events, it requires more room and equipment. If sales are carried out here, the addition of a cash register and some storage room must be considered. If the selling operation assumes commercial proportions by vending stamps, cigarettes, post cards and tickets, its character changes from that of a courtesy service.

Should the building have a paging and public-address system, its controls may well be located in the information center. At least provisions for using the paging system should be available to the center as many of the requests for its use are received here. Stringent controls should accompany the system to prevent its becoming obnoxious through overuse.

The amount and variety of service rendered by the information center determines its size and complexity. It may require a waiting area for those being served, although a nearby lounge usually answers this purpose. If auxiliary tasks previously mentioned, such as issuing equipment, selling tickets, or typing, are performed, they require more facilities and room. Usually a counter or window can serve to provide the communication and separation desired. For larger unions a multistation center which can be partially closed during slack hours may be worth considering.

Needless to say, the information center should be attractive since, among other things, it affords newcomers an initial impression of the whole building. Those seeking information should be easily seen by the attendant, even if he is engaged in secondary tasks. If the center is located near an entrance, its occupants should not be subject to drafts from opening doors.

Non-Union Offices

Many union buildings do house functions not designed to further the union's purposes and not controlled by the union organization. Such functions often include the placement office, alumni office or other administrative offices. Other functions, such as student government, campus newspaper or college yearbook, while not controlled by the union, do have parallel purposes and can scarcely be considered non-union. Hence these latter are considered separately from non-union facilities.

Because the union building is the center of student life and attracts most of the students at some time or other and enjoys a relaxed atmosphere, other administrative officers, often in the personnel division, wish to be located therein. A careful review of the purpose of the union and its building should be made whenever such a proposal arises. Otherwise, the original function of the building may be changed by the addition of non-union aspects. Union buildings are notoriously crowded and nearly always in need of expansion; therefore any space used for non-union operations may add to the shortage of union area.

If non-union offices are included, they should meet the general planning principles of the union administrative offices. Student traffic does not circulate quite as freely through these spaces and desks may not be used as frequently for conferences, but good lighting and ventilation, comfortable, functional equipment and attractive surroundings are still required. The location of these areas is not as strategically important as many of the union areas, although they should certainly not be next to noisy games rooms or busy cafeteria corridors. Location near lounges often assists in eliminating additional reception and waiting rooms for these offices, but here again care must be taken that the intended use of these lounges is not affected thereby. Such offices near an entrance prove convenient for those using them, yet, from the union point of view, there may be some advantage to having their patrons walk through part of the building to get to and from them.

Ticket Booth

The traffic in tickets on a large campus is amazing and the expense involved in operating a full-time ticket bureau considerable. One large union requires two full-time and three part-time trained employees to perform its ticket selling functions. Obviously, smaller campuses have fewer tickets for sale, with a consequent lessening in the requirement for area and personnel. Such a decline is not necessarily accompanied by a lessening in need or demand for such a service, however, and ticket selling some place in the union -- information desk, office, bookstore, game room -- is an extension of the union's service function.

There are two schools of thought on ticket sales, one of which believes in establishing a booth which may be operated at set times by organizations to whom it has been allocated; the other requires complete control by the union. In the first instance the union accepts no responsibility for the actual sale; in the second it assumes all responsibility. Much can be said for holding students responsible for their own arrangements, including ticket sales. However, as a service to the campus, particularly when several nearly simultaneous events are planned, the rotation or use of a ticket booth is not very efficient. This practice may create a condition often compounded by the occasional failure of a booth to be manned when scheduled. From the standpoint of overall community efficiency, a central bureau selling all tickets seems to be the logical conclusion on all but the smallest campuses.

Expansion of a ticket office is not likely to present a problem, since one or two persons can usually handle its day-to-day requirements. However, in the interests of flexibility, expansion of facilities may be very desirable just prior to the opening of a play, dance or ball game, particularly if box-office facilities at the location of the activity itself are not adequate. Therefore it is desirable to have an emergency window to handle last-minute demands. If the ticket office is adjacent to the information center, extension to this area is quite possible.

Location of the ticket office should be such that purchases may be made as quickly as possible. As such purchases may be the only mission to be accomplished during the visit to the union building, five minute parking spots near the entrance closest to the ticket office expedite ticket sales, although such parking is apt to raise as many problems as it settles. Waiting lines which occur at the ticket window should not extend into main traffic corridors. Such lines passing a bulletin board containing diagrams of the seating arrangements of the halls and stadia to which tickets are being sold may assist in speeding up reserved seat sales, although the distribution of individual seating diagrams assists more.

The equipment of the ticket office varies with the number and kind of sales. Obviously a cash register with several drawers, properly divided to hold tickets which may be of varying shapes and sizes or on rolls, is needed. If tickets are accepted for sale at the booth, room for receipt forms becomes necessary. A counting table, filing cabinet, chair and stool, adequate lighting and ventilation and, unless proper facilities are nearby, a safe are needed. Alarm systems and occasional police protection may be desirable in colleges where athletic teams, drama groups or musical concerts attract large crowds and where the union handles such ticket sales. Some sort of announcement board should carry the information, such as dates, prices and places, concerning the events.

If ticket sales are centralized in the union building (not necessarily to the exclusion of all other selling points) those persons now connected with sales of tickets for athletic, music, dramatic, cinematic and social events should be consulted in an attempt to determine the potential requirements of the area. Such persons should enter into the organizational planning stage to ascertain the desirability of a central ticket agency. The advantage of increased traffic to the union building is obvious; the additional cost of administration not so clear.

Public Telephones

Public telephones, while furnishing revenue, render a service which requires practically no effort on the part of the union staff. The establishment of a telephone center at a small Eastern men's college (Wesleyan) was made with the cooperation of the telephone company and proved most satisfactory. It provides telephone directories for the principal cities of New York, New England and Pennsylvania, the areas from which most of the students originate; a large diagram of the campus with a directory adjoining it; maps of the city and vicinity and of the state road and recreation system; bus, railroad and airline schedules for distribution; stamp and cigarette vending machines, and two telephone booths, the monthly revenue from the latter averaging one hundred and fifty dollars.

To such a telephone center might be added seating for those who expect return calls, and a coin changer; the latter is useful if sufficient occasional supervision is available to prevent wholesale tampering. If such a center is located near or combined with the information center, the duplication of maps and timetables is eliminated. The numbers of the pay stations should not be listed in any telephone directory unless staff members are available to answer them or are prepared to let them ring unanswered.

Since an added telephone directory or two occupies little space, conduit and space for extra booths permit reasonable expansion of the telephone center. If booths are to be built into the area, this should be done after the telephone company has been consulted and with the knowledge that this lessens the flexibility and expansibility of the area. Normally the company supplies new booths, well lighted and ventilated, for a new building as well as most of the other equipment for the area, such as directories, covers and shelving.

At least two unions (Wesleyan and Cornell), with some success, have used chalkboards on the walls of their telephone booths and furnished chalk in an effort to eliminate the usual marring of booth walls. Strong ventilation of the telephone center is needed and ash urns should be easily available, since smoking in such areas appears to be compulsive. Lighting over the directory table should be about seventy foot-candles with brightness balance not too important in an area occupied for such a brief time. Art prints on the walls of the center serve their dual purpose of decoration and education. Memo pads and anchored pencils near each directory assist those who encounter difficulty remembering the ever-lengthening telephone numbers. Posted lists of living unit numbers near each booth save much recourse to the directories.

Western Union

The Western Union center consists of little more than one or more teletype machines and a writing table or counter and chairs. Smaller unions, to take advantage of existing personnel, may wish to combine the telegraph center with one of the offices, the bookstore or the information center; others may find it feasible to operate a separate office. A telephone line is needed for each printer and at least one other telephone must be available for accepting messages and for relaying messages received. Because a cash register and billing forms are needed, possible association with a bookstore, news counter or similar commercial area is recommended. Filing cabinets for old telegrams and racks for holding blanks should be provided. Both visible and audio signals for attendants are available on the teletypes and both are probably indicated, particularly in a combined operation. The Western Union company furnishes all the required equipment and assists in planning the area. The printers are at least as noisy as electric typewriters, so separating them from other areas may be advisable. If the Western Union facilities are next to the public telephone center they permit the sharing of telephone directories.

Rest Rooms

Expansibility--Increasing rest room facilities generally is accomplished more easily by the addition of more rest rooms than by the expansion of existing areas. Fixed plumbing and fixtures, tile walls and extra ventilation do not lend themselves to enlargement, unless provisions were made originally.

Safety--The floors of rest rooms should be non-slip. The amount of water used can make for wet, slippery floors and the chemical action of urine on cement not only causes deterioration but unpleasant odors. Non-slip terrazzo, quarry or ceramic tile are satisfactory floor materials. Floor drains and hose outlets make cleaning easier, as do wall and ceiling hung fixtures such as basins, urinals, toilets and toilet partitions. Obviously, a floor area devoid of obstructions and impervious to water can be hosed and scrubbed easily, an important feature in toilet areas. Forced ventilation with separate ducts is necessary for toilet rooms to permit the proper exhaust of odors from the area and the building. Sunlight is desirable, with the window area equal to about one-eighth of the floor area. Artificial light should be available in sufficient quantity. Each lavatory, mirror and toilet stall should be provided with a shelf. Placement of the mirrors away from the wash basins assists in eliminating some of the drain-clogging problem which results from hair in the traps. The shelves should be large enough to hold textbooks and handbags. Sanitary napkin vendors should be installed in the ladies' rooms with sanitary receptacles in each booth. Consideration of ladies' urinals, a development not widely accepted yet, may prove worthwhile from a sanitation and convenience point of view.

Appearance--An unclean appearing rest room is certainly to be avoided. Tile floors and walls of attractive colors and designs are available and easily cleaned. Stainless steel fixtures and shelves and simple mirrors are in the same category. Marble or stainless steel toilet partitions are easily cleaned, but once scratched cannot be repaired. Electric hand driers eliminate the unsightliness of the used paper towel which so often goes near, but not in, the receptacle and quite frequently clogs the toilet drain, but they do offer targets for the tamperer as well as a high initial expense. Properly operating tissue dispensers keep most of this paper off the floor. Plenty of light throughout the room is apt to prompt cleaners to keep the area clean.

Functionality--Washbasins in public places are seldom used to remove grime or dirt and the need for stoppers may be questioned along with separate hot and cold faucets. One single faucet with an automatically closing valve dispensing warm water may serve the purposes of the rest rooms. A variation of such a basin is available to serve two or more persons at once and operates with the use of a foot pedal, thus automatically preventing faucets left open and consequent waste. Soap dispensers at each basin, whether using liquid, lather, bar or powder, should be as leak-proof as possible. Pushdown liquid dispensers which do not rely on gravity feed answer this requirement and may be installed directly into the bowl ledge with the receptacle underneath the bowl, but are somewhat more prone to stoppages. Glass soap containers, useful in revealing easily the amount of soap remaining, are breakable, and metal or plastic containers are preferred for safety reasons. Use of a piping system for liquid soap emanating from a central reservoir might be useful in large rest rooms because of the labor saved in filling only one tank. The added piping expense and possible clogging of lines must be counterbalanced against this advantage. Suppliers who sell paper, soap and sanitary supplies often furnish dispensers of various kinds free in return for the privilege of selling supplies for them, but may hamper future purchasing changes because of a lack of standardization of the dispensers.

Smoking occurs frequently in rest rooms, and ash trays or urns are desirable near the entrance, washbasins and mirrors. Individual ash trays combined with locking devices are available for toilet compartments and may have some value in keeping the floors clean in this section. Traffic interference in rest rooms can be lessened if lavatories, toilets and urinals are located on different walls. In ladies' rooms it may be desirable to provide seating in front of mirrors with a make-up ledge or shelf, complete with ash trays. This is a particularly desirable feature for the ladies' rooms serving the ballrooms, where a separate lounge with vanity benches and easy chairs can be located adjacent to the rest room. Dispensers of pocket packets of cleaning tissues offer an additional service and, if vending machines are used, an additional income.

Efficiency and Economy--Flushing toilets and urinals presents something of a problem since some persons fail to do so, creating odors and uncleanliness. The use of foot-operated flush valves assists in eliminating this as they are more convenient and sanitary to use (albeit more difficult to maintain). Automatic periodic flushing of urinals by means of master valves solves much of the flushing problem but at the expense of considerable water waste. Preventive maintenance is urged rather than the inclusion of deodorizing systems of various kinds which actually mask rather than eliminate odors. In this connection, perhaps, it should be pointed out that no reliable information has been obtained to substantiate the claims of manufacturers of "ozonators" and ultra-violet sterilizers concerning the practicality of their installations in rest rooms. Short exposure times and large amounts of air make their efficacy quite questionable.

Toilet rooms (one for each sex) backing up to each other and separated by a service space of about thirty inches offer a plumbing saving and easy maintenance. Each room should be at least ten feet wide and have its entrance shielded to prevent visibility from the corridor.

The scattering of rest rooms throughout the building is limited by plumbing lines; however, such lines should be positioned in advance to permit the installation of rest rooms near large seating and food service areas. Because of additional traffic, first-floor rest rooms might well be larger than others in more segregated spots. More washbasins should be installed near food areas and game rooms,and single-sex institutions must adjust their requirements. The number of fixtures in various areas is problematic because of the sharp fluctuation of the number of people in the building and the tendency toward peak loads following class-hour changes and special events. A compromise between the estimated peak hour attendance and the estimated normal attendance seems sensible, with some variation permitted from area to area. Thus, 1 water closet for each 15 persons may be required in the dining areas while 1 for each 50 suffices near such places as the lobby or ballroom. In these foregoing areas,a lavatory should be allotted for each pair of water closets with a urinal also allotted for each water closet in the men's rooms. Theatre rest rooms should allow at least 1 water closet for each 75 women and 1 lavatory for each 250 women, while men's rooms should plan for 1 water closet for each 75 men, 1 urinal for each 100 men and 1 lavatory for each 250. Office areas should allot a water closet to each 15 to 25 persons,with a lavatory for each 2 water closets and a urinal in addition for each 2 water closets in the men's rooms. All toilets and urinals should be of vitreous china with no sharp corners. Urinal outlets should be properly screened to catch such debris as cigarettes and matches, unless they have large outlets and power flushing. Toilet seats should be sturdy and impervious with open-front seats on top of elongated toilet bowls. Hose outlets for easy cleaning should supply hot and cold water and all piping should be non-corrosive to permit longevity. Pressure within the building should be great enough to prevent drops in faucet pressures when toilets are flushed.

Employees' wash rooms allowing a degree of privacy, perhaps in connection with a rest lounge (at least for women staff members), help staff morale. If food, custodial and maintenance employees change uniforms on the job, locker rooms are a necessity and should be well ventilated, comfortable and attractive. The same principles apply to these rest rooms as those used for the public rooms, except that urinals might not be considered necessary in the men's room, but scrubbing facilities should be required of the washbasins. If showers are indicated, proper water temperature should be controlled. Shower heads should be at shoulder height. First aid equipment may be kept in these rest rooms, particularly in those near the kitchens. If not located completely in the service areas, employees' rest rooms probably function best if keys are required to enter them.

Private washroom, toilet and shower facilities in connection with some offices are not as luxurious as it might appear, since members of the union staff are often required to remain on campus after a day's work, sometimes with a change to formal wear included in this requirement. Local situations must be considered when deciding this.

Water coolers recessed in corridors near rest rooms and janitor closets save on plumbing and interfere but little with traffic, except during intermission of plays and dances. Additional coolers or refreshment bars nearby may offer some alleviation here.

Duplicating Facilities

Communication is the life line of the union. With as many as five hundred committee members working for some union organizations and with hundreds or thousands of campus people to notify concerning program or policies, contact with some of these must be maintained almost daily. Intercampus mail deliveries with no postage charges make mailing a very desirable means of communication. Actually much the same sort of thing is true of other student organizations. The availability of duplicating equipment to the union staff and board as well as to other organizations is quite important. This equipment might range from the gelatin hectograph process through offset duplicating, although services at the latter end of the scale call for skilled operators to run the complicated electric stencil and offset duplicators. For most purposes a simple spirit duplicator of the Ditto type or friction-fed stencil machine like the Mimeograph suffices and lends itself to operation by nearly anyone after a few minutes' experience. If a choice between the two is to be made , it should be remembered that the spirit duplicator involves no messy tasks, is easier to prepare masters for, uses different colors easily (in combination if desired) and a combustible fluid which requires considerable storage room, and cannot as yet produce a satisfactory black copy. The stencil duplicator produces many more copies, usually in black ink (colors require considerable cleaning), and permits of more effective correction. Each requires its own inexpensive paper for best results, each is available at varying costs and each can be provided with automatic feeding, electric motors for operators and counting devices.

The amount of duplicating to be done determines whether or not a duplicating room is required. Paper and ink or fluid storage, room for finished copies, operator's space and, perhaps, a typewriter, desk and chair for master preparation are needed in addition to the space occupied by the machine itself. If students are to use the equipment, they require some assistance and supervision, indicating that office space might be well devoted to the duplicating. Such students may be so much in the way that a separate room of about sixty square feet is a better solution to the problem. If students are not permitted to use the equipment or if they have their own, the use by staff alone simplifies the situation to one of whether the amount of use per day or per week warrants separate space allocation for duplicating. If a work table in an office is used, a portable duplicator with storage elsewhere frees the space for other uses.

Also nearly indispensable to a union operation is a post card duplicator which operates on the stencil principle, occupies the space of a small table radio and can be used immediately for running off announcements of meetings, notices, emergency tickets or for advertising.

Should one not be readily available to the union on campus, an addressing system with plates for housing units, faculty, staff and life members of the union, expedites mailing. The rapid change of student addresses makes cutting plates for them an expensive and questionable procedure. Inexpensive, easily operated and portable addressing equipment is available and may prove to be a valuable adjunct to the duplicators. If much use is made of the government postal system a stamp metering machine may also be useful.

Lost and Found

Lost and found departments present irritating problems. If the institution operates a central bureau, it is a fairly simple matter to dispatch to it all articles turned in. If such articles are kept and an attempt made to return the more valuable of them, a start is made towards a lost and found department. Since it is nearly impossible to refuse to accept items which are turned in as found, a union staff in all probability must reconcile itself to maintaining a lost and found center of some proportion. It is here that dirty gymnasium clothes, wet towels, bag lunches, scarves and other indescribables appear. Glasses, wallets, textbooks and similar articles of some value present no particular problem since they store easily, often carry identification and are worth enough to encourage the loser to undertake a search for them. The more perishable and obnoxious properties require more room and ventilation and are usually less likely to be claimed.

Disposition of found items has considerable bearing on the size and kind of area reserved for returned articles. If only hard and valuable properties are accepted,a few drawers and cabinets suffice on all but the larger campuses, but if everything is accepted and kept for the academic year at least a large, well-ventilated closet is needed and a vault of some kind for cameras, wallets and the like might be called for. A number of unions post lost and found lists periodically with warnings concerning deadlines, thus disposing of most of their accumulation after the deadline passes. Auctions, despite their legal impropriety, are used to get rid of the properties and the revenue devoted to a worthwhile cause, sometimes the union.

Operating a full-time lost and found department is hardly a worthwhile union service unless it be the central service for the whole campus. Lost and found service in connection with a check room or information center makes a good combination because of the length of time of service available and the naturalness of repairing to such places when losing or finding articles. Neatness of storage must be possible, perhaps by adjustable shelves and drawer dividers, if the lost and found department is not to become a jumble. Paper bags, properly labelled with the finders' names, are useful in holding items. Receipts should be given to finders and records kept, at least in the case of valuables and currency.

Bulletin Boards

As the center of campus life the union building becomes the most prominent place, to most people, for the dispensing of information. Requests for posting advertisements, posters, official pronouncements, meeting notices, sale announcements and myriad other items are received. Determination of the policy to be followed is necessary if adequate bulletin board area is to be available. Certainly union activities should have an opportunity to advertise themselves in their own building, but not to the exclusion of everything else. Posters stuck on doors, notices on walls or banners across ceilings, if tolerated, quickly render a new building shabby and unkempt. A partial solution is plenty of bulletin boards, preferably under control, although this undoubtedly means glassed and locked if complete control is to be exercised. Some bulletin boards or parts thereof may be assigned to the union, some to official notices, the others left open. Standards of size, legibility and duration may be imposed and a rubber stamp used to authorize posting to be done by a staff member daily.

Bulletin boards must be placed where they can be seen and read by the largest number of people if they are to fulfill their purpose. Unless they are to serve also as display cases for art work there is little flexibility about bulletin boards, particularly since their prime function is a continuing one. They should be amply lighted, either independently or by room and corridor illumination. If lighted independently so that effects can be achieved by lighting, such as the use of black light and fluorescent signs, they serve their purposes somewhat more effectively. In enclosed areas, such as glassed bulletin boards or display cases, fluorescent lighting is to be preferred over incandescent because of the lack of heat generated and consequent lack of warpage of paper and cardboard. Designs must allow for the changing of ballasts, and lights should not reflect into the eyes of observers.

Bulletin boards which open from the rear eliminate interference with corridor traffic and the possibility that unobservant persons may walk into open glass doors. Posted in stairwells, they present something of a hazard because of the tendency towards reading rather than carefully using the stairs.

Built-in bulletin boards, recessed in walls, are easy to clean and can be designed with wood or metal frames to fit the decor of the surrounding areas. The backgrounds may be painted to blend with the color scheme so that absence of notices and posters does not leave drab areas in the wall space. If the bulletin board area is a large one, a few standard poster-size (14" x 22" or 11") frames similar to those used in theatres may be included to offer additional neatness. A few stock union posters, such as an advertisement for the food services, may be kept on hand to eliminate the possibility of these frames being empty.

Portable bulletin boards for special notices or for additional space can be built easily from soft wall board and framed with wood or metal and placed on standards similar to portable chalk boards. Easel type boards for either floor or counter use augment bulletin boards nicely. At the Tomlinson Hall, Case University, a revolving four-sided bulletin board near the main entrance supplies a unique means of communication.

To serve their function, bulletin boards must be easily seen and read. The maintenance of them is at least as important as their design and location. "Dog-eared" notices, layer on layer, destroy their functioning quickly. Staples and thumb tacks must penetrate the posting surface easily, hold well and be easily removed. Magnetic boards are handy to use but not very effective with heavy stock such as posterboard. Pegboards are versatile for hanging displays because they utilize a variety of hangers, and perforated tack boards hold considerable promise for combination display cases and bulletin boards. Cork tack boards remain as an excellent bulletin board surface. Double-doored bulletin cases leave a section in the middle of the case which is obscured because of the meeting of the frames. Hinged backs make the use of large glass front sections possible, thus providing larger display areas. To be effective, bulletin boards should be scattered throughout the building with copies of notices and posters repeated in each.

Lobby

Since a lobby's prime function is receiving people, the need for its expansion when the building grows may be better served by the addition of another lobby at another entrance, unless the original lobby is adequate. If a lobby is to be enlarged at a later date, this enlargement can probably be best accomplished by the envelopment of an adjacent meeting room or lounge.

The flexibility of the lobby is governed by its size. If it is in actuality a large lounge with a receiving area, as found in the University of Connecticut union building, all the activities listed as applicable to that area in the facilities table can be held there, albeit some of them such as record listening and dancing are not well housed there. If, on the other hand, it is little more than a large vestibule into which corridors, coat room and information center open, then no activities other than possible displays and special sales can be held here. In the first instance, lounge furniture, carpeting, side tables and other equipment should be as flexible as possible to permit of multiplicity of use; in the second instance, little more than cigarette urns and display cases are needed.

As the union building usually is the scene of gatherings after shows and athletic contests, on homecoming days, at convention times and similar occasions, it should be prepared for the sudden appearance of crowds. The existence of a large reception lounge adjacent to the lobby, with large doors or a folding wall ready for opening to extend the confines of the lobby proper, accommodates these surges without lessening the daily effectiveness of the lounge, which the usual lobby traffic and bustle is nearly certain to do to an open lobby-lounge.

The lobby, except in the most moderate of climates, is protected from sudden drafts by a double or revolving door vestibule which collects much of the dirt brought in by shoes. Recessed rubber matting easily removed for cleaning assists in maintaining the vestibule. A drain at the bottom of the recess leading to the storm-draining system permits quick flushing and cleaning and is a boon during bad weather. Such a vestibule saves wear and tear on the floors of the lobby as well as the rest of the building. The amount of traffic encountered in the lobby demands durability of the flooring, but surfaces which require waxing are questionable. Non-slip terrazzo which requires little other than diligent washing combines practicality with attractiveness. If carpeting is used in the lobby, it should be well padded, securely fixed and regularly cleaned. Lobbies should be well lighted in view of the fact that those entering from bright sunlight encounter some difficulty in adjusting to interior lighting. Good lighting assists in creating a welcoming atmosphere and enhances the attractiveness of the decor. Acoustic ceilings absorb some of the sound of a normally noisy area.

The lobby's function is that of receiving arrivals and aiding in distribution throughout the building. Building and activity directories should be prominent and explicit to permit most of those who enter to find their own way to their destinations while acquainting all entrants with the events scheduled for the day. The information center should be obvious and convenient, the coat room handy. Because the lobby adjoins the main entrance, it should offer little in the way of impediments to traffic, not only to permit good circulation but also because it is a prime emergency exit. It should be wide enough to prevent the conversation groupings which inevitably gather here from obstructing others using the area.

Such luxuries as automatic door openers and electric eye counters for taking the count of those entering the building (a frequent measuring device of recreation programs including college unions) may assist in making the building somewhat more functional, as well as more expensive. If a paging system is included in the public-address system, a speaker should certainly be included in the lobby. Drinking fountains and rest rooms, if feasible, should be in or near the lobby.

Delivery Area

Larger unions might well utilize central delivery and stock rooms with full-time receiving stock clerks; others may have to settle for receiving rooms from which supplies are distributed to the various departments. Regardless of the administrative devices used in receiving, the area requires a platform, an access road, parking space and room for immediate storage, uncrating, weighing or checking.

Space left for additional parking and turning of trucks and for the extension of an unloading platform assists materially in expanding the delivery area to permit simultaneous loading and unloading. Finding additional space inside the building is not so simple, but the need for such extra footage can be lessened if interior transportation to storage spaces, such as elevators, dumb-waiters, conveyors or dollies is efficiently planned at the beginning. Even smaller unions are likely to encounter the arrival of two or more deliveries at the same time, and adequate unloading space is appreciated many times.

The expansion of facilities by means of additions or new wings is almost certain to encroach upon delivery areas since driveways leading directly to the building must cover land adjacent to the structure. Usually this does not present a great problem if the topography does not interfere, since the receiving area can abut storage areas which any new addition undoubtedly embraces. Hence, when expanding, the placement of new storage and service spaces near the original delivery area to avoid long internal transportation or interference with public areas eliminates wasteful unloading zones inside the building or long delivery corridors. When planning for expansion involves the addition of a facility requiring frequent deliveries, such as a bookstore, food service or post office, proper provisions for driveways and unloading areas must be made. Interference with parking lots, vehicular or pedestrian traffic, or outdoor activity spaces should be avoided. The extension of utilities to this area should allow for a clock and intercommunication station as well as adequate ventilation.

Trash and Garbage Rooms

The delivery area, by its nature, is the logical place for trash and garbage collection. A trash room and garbage room, the latter preferably refrigerated, should be adjacent to the delivery platform for ease of removal as well as deposit of crates and cartons resulting from unpacking. If a trash incinerator is included in the building, it should also be located here to permit ease of removal of ashes and quick burning of the debris resulting from unpacking. Each of these rooms should be separated from the other and have its own lock to help eliminate pilferage, vandalism and rodents, and all should be of fire-proof construction with fire detection and fighting equipment well distributed. The floors should be of sealed cement or tile with drains to permit hosing and scrubbing. Hot water hose faucets should be available, as should a steam line for cleaning and sanitizing trash cans. In the larger unions, a can washing room and equipment may be indicated, particularly if the garbage is not ground and flushed to the sewage disposal plant. All areas should be well ventilated to eliminate odors. Segregation and acoustic treatment assist in preventing this noisy section from interfering with the rest of the building's activities. Other than painting and proper maintenance, little can be done to make the delivery area attractive. Segregation, landscaping and fencing may separate it from the rest of the building. Steel nosing on the edge of the loading platform and at other points of impact, such as stair edges, prevents the cement from being broken by dropped tailgates or heavy crates.

To function properly trucks must be able to back up to the platform easily and leave promptly. If several unloading stations are used, the driveway should permit this without excessive maneuvering. Because deliveries are often not made on a definite schedule, trucks are quite likely to arrive simultaneously, making multiple stations desirable. Few deliveries are made other than door to door, which means that an unloading area should be large enough to accommodate shipments if storage space or a working crew is not immediately available. Actually, if the loading platform opens directly on the receiving room, drivers usually drop their deliveries inside. The platform should be level with the lowered tailgate of the standard truck body (about four feet high) and the surface from it to the receiving, storage, trash and garbage rooms should be level, with no threshholds or other protuberances in the way. Corridors and doorways should be wide enough to receive meat carcasses and hand trucks with standard cartons and include room to turn corners. The platform itself should be sheltered with an overhang to protect the area during bad weather, and no projections should interfere with the tops of truck bodies. A bell, properly labelled, to enable delivery men to summon a receiving clerk or other staff member, permits the area to be locked when not actually in use. A freight scale, some storage space for hand trucks and, possibly, a beam scale for meat carcasses, are needed in most receiving rooms. If deliveries by hand trucks or other small vehicles are anticipated,a ramp to the receiving platform may be indicated.

If a stock or receiving clerk is not included on the prospective staff roster,an office should be near the receiving area, the occupant of which should be responsible for proper receiving along with other duties. This office might be assigned to a food service or bookstore supervisor, maintenance man, games room control supervisor (not likely to prove successful),or secretary. Because of its need for fresh supplies daily,the food service receives frequent deliveries, hence the best part-time arrangement is probably achieved when responsibility for receiving starts there.

Storage

Diversification--The relationship between storage space and proper functioning of the union building has already been pointed out in Chapter II of this study. Nearly each activity requires storage and many, such as the food, games, theatre and hobby areas demand specialized storage. All offices need filing cabinets and supply cupboards. Many call for clothes closets and some require safes. The newspaper office needs cabinets for storing cuts; the ticket office, drawers for tickets. Some of the different kinds of storage facilities needed in the union building follow:

Filing cabinet (lettersize, legal size, varying card sizes)
Office supply cabinets (paper, pencils, forms, inks)
Clothes storage (lockers, closets, check rooms, coat rooms, costumers, lost and found)
Book storage (display and storage)
Display shelf storage (bookstore, barbershop, hobby shop)
Display case storage (bookstore, barbershop, hobby shop)
Inventory storage (bookstore, dry foods, hobby shops, barbershop)
Dead storage (post office, lost and found, out-of-season equipment)
Mail boxes, package bins
Maintenance closets (soaps, waxes, tools, toilet tissues, parts)
Trash
Garbage (refrigerated and dry)
Issue (games, picnic, skis, bicycles, toboggans, newspapers, records, magazines, books, sheet music)
Refrigerated (frozen and cold)
Dish and glass
Silver and flatware
Linen (clean and dirty)
Folding tables
Chairs (folding and stacking)
Hand carts and dollies
Public-address system (portable equipment, microphones)
Day storage
Dead records storage (old ledgers, purchase orders)
Temporary storage (furniture during dance)
Bulk storage (exhibition trunks and cases, baggage)
Bag lunch
Sets and properties
Artwork (framed, unframed, sculpture)
Games (ball, paddle, racket and cue racks, bowling pin, table games, wickets,

nets, shoes)
Photographic (film, chemicals)
Tools (maintenance, art, crafts, radio)
Outing (bicycles, skis, ropes, packs, sleeping bags)
Costumes
Make-up cases
Motion picture (projectors, speakers, screens, tubes. parts, tools)
Firewood
Piano and bench
Rostrums
Newspaper morgue
Fuel

The way in which the various union facilities function determines, to a large extent, the kind of storage needed. Thus, in a food operation where one-time paper service is contemplated,the paper and trash storage areas differ from an operation where china and glassware are used. A self-service bookstore requires more display storage than one using many clerks, and a building with many multipurpose rooms requires more temporary storage for furniture, carpets and similar items than one with a variety of single-purpose rooms. The kinds of areas being serviced govern the kind of storage needed, and storage requirements will be discussed with each area. Some general observations about most storage facilities may be made.

Expansibility--As the union organization flourishes it, like any other dynamic institution, finds its possessions accumulating. Through the normal course of events correspondence and record-keeping demand more filing space. Inventories grow to meet the variety of demands and increases in enrollment. Additions are made to record and art collections, and new programs and new ideas demand more equipment. Even the most rigorous replacement program cannot eliminate all the "still good" articles no longer in use but held in reserve. Early deliveries and late pick-ups or errors in orders cause cumbersome articles to await transportation for seemingly endless lengths of time. Hence, original storage facilities should be large enough to permit normal growth of inventories and equipment. When planning for union facilities to be added or expanded at a later date, storage facilities must be included in the addition or expansion plan. Care must be taken that expanding areas do not grow too far from the original storage area, thus making for lengthy transportation or cross traffic. Expansion of storage space may be accomplished by duplicating some facilities rather than by mere enlargement of existing ones, so that a large addition to a ballroom may be better served by having its own chair and table storage instead of enlarging the original. In other areas, such duplication may be ill advised, as in the case of a central stockroom serviced by a clerk. Here, another stockroom might mean employment of a second clerk or loss of efficiency and so expansion of the original room is preferable. Expansion of original storage facilities often requires extension of ventilation, electricity and plumbing. Walk-in refrigerators demand extension of insulated walls, floor drains, compressor and refrigerator lines when enlarged.

Flexibility--Storage areas usually have but a single practical use--storage--if for no other reason then the safeguarding of their contents. The flexibility of some can be enhanced by the use of portable, adjustable steel shelving, accessible from both sides, and by good lighting and ventilation. In this way it is possible to store many different items in them as the occasion demands. If equipped with large doorways, they permit the use of handcarts and dollies and the entrance of large objects like pianos or divans.

Safety-- Storerooms are quite likely to be hazardous. Fires are easily started in such unwatched places, and fire-resistant construction and a fire alarm and automatic protection system should be incorporated in at least the largest storerooms. Outdoor metal storage for such combustibles as paints, oils and cleaning fluids should be constructed. Gas or oil tanks used for cooking or heating should be separated from the rest of the building by fire doors, fireproof walls, ceilings and floors. They should meet all underwriter's demands for protective devices.

Storage areas should be large enough to provide sufficient working space for loading, or unloading or inventory taking, including the use of hand carts or fork lifts where necessary. Signals should be installed in self-closing storage areas such as walk-in refrigerators. All shelving should be easily cleaned, and drawers and bins should be removable for cleaning. Floor storage should be avoided, particularly in food areas, to prevent possible damage from leaks. Storage spaces should be cool, insect and rodent proof, and protected from overhead leaks or backed-up drains. Floors should be hard, smooth, non-slip and non-porous, on the same level as other floors, without thresholds, and able to withstand heavy weights and blows without damage. Windows should be screened and grilled to prevent forced entry, and doors, swinging inward to prevent accidents in traffic lanes wherever likely, should be equipped with sturdy locks. Lighting should be adequate to permit proper storing, cleaning and inventorying. Pilot lights which illuminate automatically with the opening of doors may prevent accidents. Automatic door openers and closers assure better security and ease of entrance. In the case of a large central storeroom, a door counter and issue bench with files and scales handy are needed, and double doors may be indicated.

Appearance--Cleanliness, durability and neatness assure storage spaces of proper appearance. Walls and shelving which can be washed and, if necessary, painted; enough room to permit proper storage; washable floors, with drains in the food area; and adequate lighting--all meet the appearance requirements of most storage areas. Combination storage-display sections such as soda fountains or bookstores require attention to color, design and lighting.

Efficiency and Economy--The efficiency and economy of the storage areas are largely determined by their size and location. Overcrowded storerooms make for breakage, extra work, poor inventorying and duplicate purchasing. Poorly placed ones require added transportation. Obviously, a janitor's storage closet on each floor is preferable to one large central one, yet storage of all the janitorial needs for indefinite periods on each level would result in outsize closets. Central storage, permitting proper control, with small storage units such as janitors' closets and day food storage near the point of use, should be included for efficient use while preventing loss or misuse of supplies and equipment. Desegregated storage which places the storage unit near the point of use includes filing and office supply cabinets, coat and check rooms, display storage, maintenance closets, trash and garbage collection points (even wastebaskets might be included here), issue rooms, reach-in freezers and refrigerators, dish, glass and flatware dispensers, folding platforms, tables and chairs, linen closets and firewood. Central storage includes such items as walk-in refrigerators, dry stores, lost and found, inventory storage, dead trash, garbage and post office storage, central china, glass and linen room, bulk storage, bag lunch, games, art, theatre, hobby and other specialized storage.

One central storeroom from which all areas draw may be ideal as far as control is concerned but certainly is not practical, since such items as bag lunches and daily mail, while collected at one point, can hardly be handled as stores. Central control is an ideal to foster, however, and to recommend, insofar as the variety and length of time of the union operation permit. Smaller, specialized storage points must exist throughout the building. There may be campuses with highly refined purchasing and storage systems that, like Michigan State University's, reduce the necessary union storage space.

Moving articles from receiving to storage to the point of consumption or use is an important function performed within the union building. Freight elevators, dumb-waiters, horizontal conveyors, hand trucks, dollies, platform trucks with jacks or even fork lift trucks should be considered during the original planning, and doorways, corridors and storage spaces should be built to permit the passage of whatever mobile equipment is selected. Floors should be level and ramps used wherever changes in levels may be needed. Trucks should be rubber-tired and bumpered to protect floors and equipment, and designed where necessary (as in kitchen pass-through equipment or folding chair storage) to accomplish their purpose. Conveyors, whether horizontal or vertical, should be equipped with proper operating and safety controls.

Since the detailed planning of storage areas belongs with the planning of each individual area, the various subcommittees working on these areas should make their own arrangements, including their particular section of a central storeroom, should one be indicated. Here again the operational system in such areas as stock control, requisitioning, inventorying and purchasing should be established at least in outline to assure that the building is planned for it, and each sub-committee's proposals must be integrated into the overall plan and building.

Janitors' Closets

With its facilities quite likely to be used the equivalent of two complete workdays (sixteen hours) seven days a week, and with its traffic apt to be heavier than that of any other campus building, the union plant presents inordinate demands on its cleaning staff. Not only is it a busy place, but also many of its appointments demand more attention than the usual classroom building. Perpetuation of the union atmosphere demands continuous adherence to housekeeping diligence. Carpeting, upholstered furniture, draperies and wooden floors represent some of the more unusual cleaning problems which confront the union staff. Ash trays and urns may exist in every room and require periodic emptying. The nature of the union building is such that the effectiveness of its appearance and its operation is lessened by poor maintenance.

If a work standard for janitors does not exist on the campus, union planners should seek assistance in promulgating such a standard for the union building. Such a standard assists not only in establishing a quota for the janitorial staff, but also proves of value in locating janitors'closets, since each closet should be as close to the area it serves as is possible. The following figures may be of some value, although it should be remembered that the quality of help, hours of operation, climate, kind of areas being cleaned (obstructed or unobstructed) and the amount of use all affect their application in a specific instance:

A sweeper can clean about 2, 500 square feet of unobstructed floor space in an hour, while only 2, 000 square feet of obstructed space or 1, 330 square feet of carpet may be swept during the same time.

One man can remove the old wax and completely rewax and buff between 3, 000 and 4, 000 square feet of floor per eight-hour day.

A mopper can mop and rinse about 1, 750 square feet of soft floor area per hour.

One man can maintain about 800 square feet of floor area per hour.

One maid can clean about 5, 000 square feet of guest rooms per day, dust about 200 chairs per hour or clean about one desk per minute.

One man may wash, inside and out, eighty average size screenless windows, in one eight-hour day.

Corridors requiring wax should be waxed on an average of once a week. Office floors should be waxed every two weeks.

The kind of janitor's (or porter's) closet varies some with the location. Some may require space for a linen cart, others a floor machine. In general, however, the requirements are alike. The janitor's closet should be large enough to house one sixty gallon mop tank, an eighteen gallon, two section tank, a six-foot ladder, a wet-dry vacuum cleaner, a buffer and a linen cart, and be equipped with a sink, a floor type hopper, hangers for dusters, brooms and brushes as well as shelving for supplies, bulbs, ash trays, toilet tissue and the like. The hopper and a hosed faucet eliminate the lifting of heavy buckets and mop tanks. These latter should rest on casters or dollies to permit ease of moving. Each closet should be ventilated and have its own mop stand. The walls should be tiled to the ceiling with quarry or ceramic tile for ease of cleaning, and the floors should be quarry tile. Among the supplies which are stored in the closet are waxes, polishes, cleaners, sweeping compound, detergents, hand soap, toilet tissue and bulbs. Additional space for refuse may be needed if separate storage is not provided for it.

Upholstery and Maintenance Shops

An upholstery shop need not be expected to reupholster all the union's furniture to prove its value. Constant wear and accidents provide numerous pieces in the larger unions for repair or recovering. This service reduces to a minimum the amount of time lost during which the furniture has been out of service, as well as working a possible financial saving. This shop needs a cutting table with holding rollers, a sewing machine, saw horses, some clamps, springs, spring twine, cushions, filler materials, fabrics, reinforcing angle irons and miscellaneous tacks, screws, nails and upholstery tools. A relatively small space with saw horses and the tools, springs, padding and findings available from mail order houses, can help smaller unions to handle their upholstery troubles. In such instances combination upholstery-maintenance shops might solve several related upkeep problems. The repair or maintenance shop requires a work bench, some small machinery and tools, such supplies as nuts, bolts, casters, screws, and glue, and parts for sweepers, shades and venetian blinds. If a power tool shop is included in the building, it may well serve for repair purposes, particularly if used for these purposes during the slow hours. The Wisconsin Union has found its upholstery shop, operated over a period of years, a valuable asset. Many unions will find that a shop where springs can be tied, legs or rungs glued, rips sewn, cushions covered, casters repaired, hinges oiled or furniture recovered is a definite asset.

Elevators

If areas which accommodate crowds, such as the ballroom or banquet hall, are located near the ground level, elevators may not be needed in any but the tallest union buildings. If large numbers are expected to meet on the top floors,elevators transport them there effortlessly and quickly and without the disturbance which hundreds of people might cause when trooping up or down stairs. Formal dance gowns make stair climbing difficult, and so a ballroom above the ground level should be served by an elevator. Large elevators are needed to service mass meeting areas. An elevator holding 23 persons requires a shaft about 8 feet square and can move at a speed of between 100 and 350 feet per minute.

Intercommunication

Communication within the union building is obviously necessary. Staff and union board members, student officers and others working in the building must communicate with each other. The publicity and promotion work carried out on bulletin boards, by displays, campaigns and other devices actually are means of communicating with the community as a whole.

Smaller buildings may design a central mailbox consisting merely of a series of pigeonholes used for such distribution as mail, telephone messages and notes. Larger ones may require a system for distributing mail and other communications through the building. Various offices may have separate departmental pick-up spots. Means of distributing mail and messages to all employees should not be overlooked. If the college or university post office is in the building,it eliminates much of the need for an internal distribution system.

An intercommunication system is a necessity in a union building of any size since it saves incalculable time and energy and promotes efficiency through the ease and immediacy with which it transmits information. Such a system may be a portion of the regular campus telephone system with an extension at each station. This plan means that any station in the building may call any number on the campus and would have its own number. Such an arrangement is apt to be expensive in terms of payments to the telephone company, to result in unauthorized toll calls, and to require extra telephoning on the part of those who call "the union" rather than the correct extension. Switchboards in larger union buildings and multiple-line hand sets in the smaller may meet the telephone demands and be augmented by an independent intercommunication system.

Intercommunication systems may consist of "talk boxes" which act as both speakers and receivers and provide little privacy, sound-powered telephones with separate buzzers for signalling, or electrically powered telephones with bells or buzzers incorporated. Each station may be a master station and be able to signal directly with all other stations. The less expensive and less convenient system of channeling all calls through a central master or "switchboard" may be used. Telephone companies can adapt their equipment to permit its use either as a modified intercommunication system or as building public-address system,or both. Such companies should be consulted early in the planning stage.

The intercommunication needs of the building, immediate and future, should be thought out and described in detail to permit the architect or engineer responsible for the work to submit recommendations, alternates and cost figures. The advisability of telephones and/or intercommunication stations at various locations should be worked out in advance and conduits run to the likely spots.

A versatile public-address system proves of great value in a union building. It permits the playing of recorded music or radio programs to all or any combination of rooms, provides the means for making emergency, publicity or other announcements,and requires only the plugging-in of a microphone in a receptacle to have a separate system in any room desired. With such a system music from a dance orchestra may be transmitted to an outdoor terrace or a lounge. Records may be played at the control center to supply dance music in several areas. A speech to an overflow crowd may be piped into other portions of the building. Bulky portable systems are largely eliminated if the larger rooms and public spaces have microphone outlets in them, and individual controls built into these areas make the system even more flexible. Properly planned, most of the speakers can be recessed unobtrusively into the walls and can be located in outdoor terrace walls or sunshades.

Barber Shop

Some preliminary thinking about the place of the barber shop in the union organization may prevent difficulties later on. A study of existing hair-cutting habits may either reveal great increases in business before drill days on an ROTC campus or prior to social weekends, or indicate a fairly even distribution of business wherein peak loads seldom occur. Nearby competition should be taken into consideration and the existence of faculty and staff customers accounted for. The estimated length of time per hair cut should not overlook the college man's propensity toward the time-consuming crew-cut.

The number of barber chairs to be included must be decided upon by the estimated demand. Each chair needs a sterilizer, linen shelves and receptacle, wall mirror, recessed storage cabinet and an electric outlet. Some shampoo basins should be available and the lighting be sufficient to provide fifty foot candles at eye level. Overall lighting permits moving of chairs, should the addition of more chairs be called for later, but the complete requirements of each station should be borne in mind when considering the shop's expansibility. Ideal work stations place chairs five feet, six inches apart.

The shop requires waiting room and, unless it is very close to a coat room, a clothes rack. If located near the games area, lounge, grill or browsing room and if a reservation is anticipated, the amount of waiting space may be somewhat lessened by the fact that those waiting may be able to avail themselves of the other facilities. Storage space for linen and supplies is needed,and magazine and periodical racks may be indicated. A cash register is required unless script or other means of control is instituted.

Sanitation is a must for the barber shop. Tile floors and marble and glass walls are the usual materials. The appearance of the shop should add to the aseptic atmosphere but this certainly does not mean that the surroundings cannot be pleasant. The waiting area in particular affords an opportunity for decoration.

FOOD AREAS

Examination of the Classified Facilities Table (p. 47) shows that the variety of food services offered by union buildings equals that of large, modern hotels. They include soda fountains and grill, cafeterias, private dining rooms, service dining rooms, coffee shops, faculty dining rooms, commuters' lunchrooms, women's dining rooms and banquet rooms. A visit to the larger union buildings reveals that these services are equal to those provided by first-rate hotels, with hundreds of thousands of meals served monthly. For example, the Michigan State University Union kitchen prepared 150,000 meals per month in 1949, the Ohio State Union main kitchen alone prepared 4,000 meals per day in 1952,and the Wisconsin Union serves 10,000 meals per day.

Since the dining service is the main source of union revenue and caters regularly to a large segment of the campus,it is extremely important that it be planned, constructed and operated properly. If the 5 per cent profit figure and low sales prices recommended by the Association of College Unions are to be maintained over the years,the service must adhere rigidly to the principles of this study.

Functionality

As in other union building facilities,the functions of the food service areas vary with the institutions. The existence of other eating facilities on and off the campus, the policies of such facilities (à la carte, five-or seven-day board bills, semester contracts), the location of existing places as well as that of the union building, the prevalence and size of conferences and conventions,and the institution's future plans are some of the items which should be considered. The kind and size of institution may determine whether table or cafeteria service or some combination thereof is used. The rest of the union building and its projected program have some effect on the kind and size of the food service needed.

The purposes of the union can be partially achieved by the dining services since they, by name and nature, perform the secondary function of service. The fulfillment of the primary, educational function of offering the best possible social, cultural and recreational experiences depends upon the planners and operators. As an important employer of student labor and, in some cases an actual curriculum laboratory, it has inescapable educational responsibilities.

When the University of Oklahoma decided to expand its Memorial Union Building it was guided by past experience which indicated these needs: (1) a fast, mass-feeding facility, best afforded by a cafeteria style of operation, (2) a fountain for the quick luncher and snack-eater, (3) a formal dining room for students entertaining their families or special guests, (4) small dining rooms for special group meetings or dinners, and (5) a ballroom for banquets. Such a food plant, with many variations in existence, is found in most of the large union buildings and, in modified form, in many of the smaller ones. The cafeteria solves the daily meal problem, the fountain-grill -coffee shop becomes the informal social eating center, the formal dining room with its linen, silver, service and decor adds a touch of dignity to undergraduate living, the small dining rooms and the banquet rooms provide the opportunity of combining eating and programming so common to today's living.

Flow Process--The functions of the food department must be clearly defined to permit proper planning. The elements to be included, whether all or only some of those listed in the Classified Facilities Table must be decided upon. When this is known,the first planning step, analysis of the prospective menu, may be taken. The nature and complexity of the basic menu pattern determines the kind and the number of meals to be served and the size and amount of equipment required. With this information available a flow chart can be prepared. All food flow charts are basically the same, as in all food operations food is received, stored in either dry stores or under refrigeration, is prepared by such units as the butcher shop, bakery, salad, cook or vegetable sections, is served in some fashion, consumed and its remnants disposed of in the garbage or dishroom. It is the function of the union's food service to expedite this flow so that the purposes of the union are served. The concept of "dining" as opposed to "feeding" appears to best describe the union's food service function. It should be pointed out that, despite the fact that food flows through all kitchens in accordance with the same general principles, there are problems to be met in integrating dining services into a general-purpose building which are not encountered in the planning of an independent food structure such as in a restaurant.

West and Wood, in writing about efficiency and economy in food service in institutions, make the following observations:

> The efficient production and service of quality food to a satisfied clientele at a reasonable cost is the goal of any food service. The physical layout of the plant in which the service is housed plays an important part in attaining that goal, but until fairly recently limited attention was given to this phase of food-service operation. No longer is the food-service director satisfied with "just any space set up with certain items of equipment wherever they may fit," but he or she is demanding, in the interests of efficiency and quality, a well-planned layout equipped with the best that is available to meet the needs of a particular situation. To accomplish this purpose, thoughtful consideration must be given to the many

> factors contributing to the successful operation of the individual restaurant, hospital, or other type of establishment. No one plan is suitable to all types and sizes of institutions; however, there are general principles which are basic and applicable . . .
>
> Observation shows that the relationship of efficiency and the physical plant is either unrecognized or ignored in many situations. Large numbers of food services are acknowledgedly inefficient because of limitations imposed by one or several physical features of the plant. Such limitations may cause lowered production and usually lead to higher operating costs. Some considerations of the physical setup which may limit the efficiency of operation include: the location; the architectural features of the building such as materials used, details of construction, the kind of floors, walls and ceilings; lighting, heating, ventilation, refrigeration, and plumbing facilities; and the floor plan, including space allocation and the arrangement of equipment.[1]

That union buildings are not excluded from the impractical and inefficient category was borne out by the 1947 survey when

> Seventy per cent of the Unions answering testified that in one or more cases the food service facilities needed improvement. The major improvements suggested were the grouping of food service facilities together, that is, kitchens, cafeterias, and private dining rooms. The transportation of food and equipment between floors and through crowded corridors and rooms seems to constitute a major occupational hazard in Union operation.[2]

Location--With the flow process of receiving, storage, preparation, service and disposal in mind, such other operational aspects as purchasing, accounting, cleaning, supervision, personnel administration and record keeping must not be overlooked, and the whole must be integrated into a single plan. The use of a single large kitchen with some auxiliary preparation space such as short order or fountain room makes the union building the scene of an efficient food service.

> In most institutions it is desirable to have the food service located on the first floor. Basement food-service rooms present a perpetual problem of ventilation and lighting, and the psychological effect on patrons is less pleasing than in units located on the first floor or above, which have by virtue of their placement the advantage of more air and view. The location of the food service above the first floor has the disadvantage of inaccessibility to patrons and the problems relative to the necessary elevating of food supplies and the disposal of waste, both serious handicaps.[3]

Bessie Brooks West and Levelle Wood, Food Service in Institutions, 3rd ed. (New York: John Wiley and Sons, Inc., 1955), p. 513.

[2] Thomas A. McGoey, "The Main Shortcomings of Union Buildings." College Unions - 1947. Report of Proceedings of the Twenty-fourth Annual Convention of the Association of College Unions (1947), p. 22.

[3] West and Wood, op. cit., p. 516.

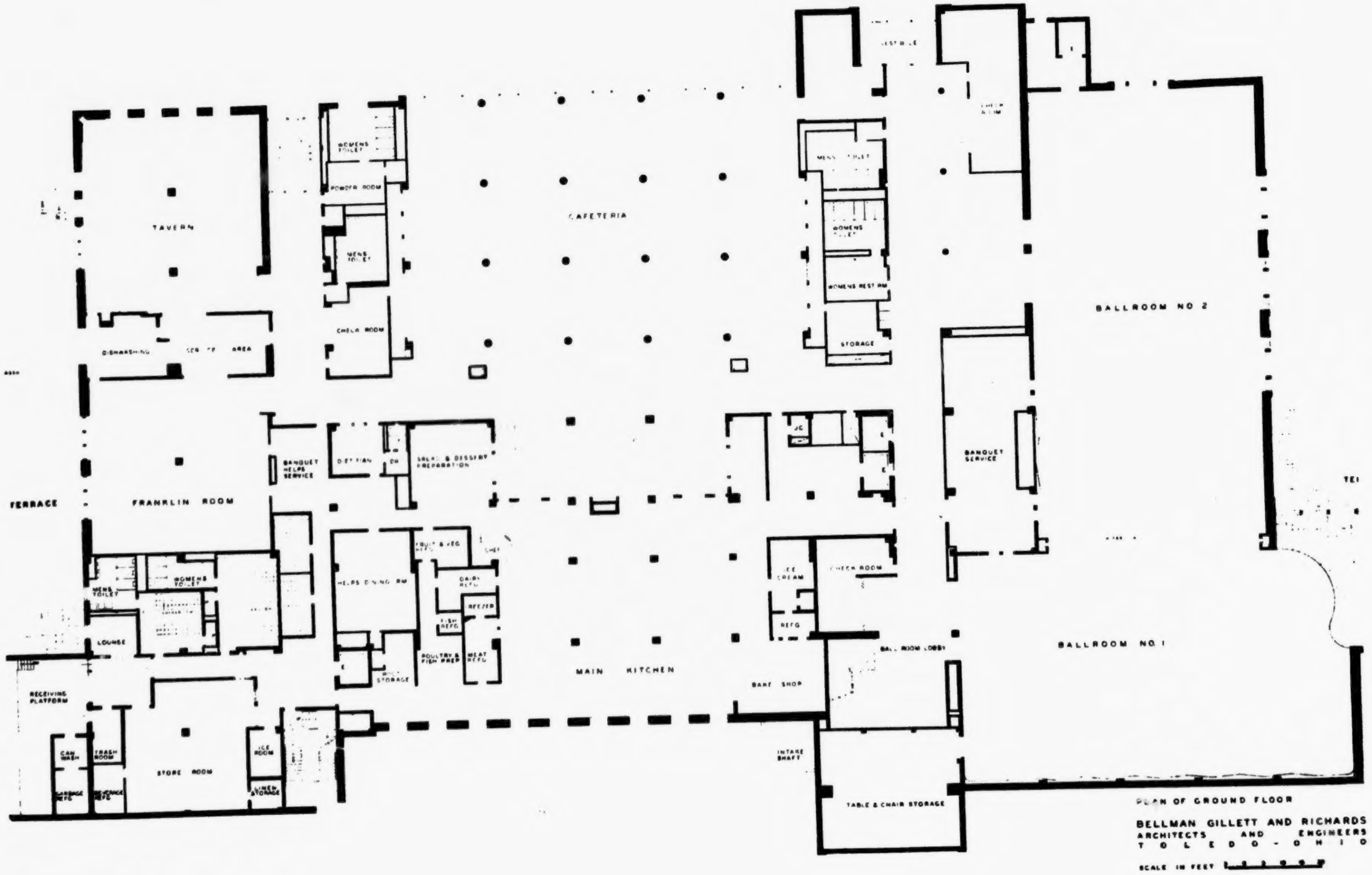
With all the other facilities such as information center, bookstore, administrative offices, ticket office and theatre which also present strong cases for first-floor locations,there may be a question on many campuses concerning the wisdom of attempting, as did the union planning committee at Ohio State University, to locate all eating facilities, including delivery service, kitchens, dining rooms and ballrooms on the ground-floor level with direct entrance from the campus. Actually, in a full-scale union food operation like Ohio State University's it is difficult to keep all dining services on one level, and even in that building eighteen private dining rooms, a lounge, dining terrace and a large serving kitchen are located on the top floor, the latter connected by elevator with the main kitchen. However, the ultimate in vertical food service in union buildings appears in the new 1954 four-level addition to the Memorial Union Building at the University of Oklahoma where elevators, vertical conveyors, horizontal belt conveyors, and roller conveyors transport food, dishes, garbage and people about the building. It is nearly certain that some food is served on floors other than the main food floor, if only for refreshment service to lounges and meeting rooms. If a ballroom is to serve as a banquet hall or if a separate banquet hall is included, provision must be made for the inclusion of this large area in any single level operation, a factor which may give pause to the planning committee. That such new union food facilities as those at Pennsylvania State College, University of Oklahoma and Oklahoma A. & M. College saw fit to place their banquet rooms on levels above the main kitchen is evidence that a large, single-level food service is an ideal not easily realized. It should be pointed out that the banquet hall and/or ballroom is likely to stand vacant much of the time, hence its central location may not be warranted in many instances.

Whether or not the whole food service is located on the first floor, or even on the same floor, it is certain that deliveries and pick-ups must be made from a street level. Consequently the receiving dock, receiving room and garbage and trash storage must connect with the street,and a receiving office overlooking the dock expedites opening doors, examining, weighing and counting goods and checking invoices. The perpetual inventory system starts here.

Because the food service operation begins and ends on the street level, there are many reasons why the rest of the operation should be located here. Supervision and communication are easier, dirty root vegetables may be cleaned next to their receiving point, dairy and other products may be quickly refrigerated, unpacked goods may be moved quickly to storage after counting or weighing, garbage and trash require less transportation. If the receiving area is alone at the unloading level, a freight elevator should be adjacent to it to permit rapid transportation to the storage areas.

As the flow process continues to dictate layout, the storage areas, including dry, root, refrigerated, cereal and day, are next to the receiving area. The various storage centers should be near their respective preparation areas,and the root storage, containing a pre-preparation section from which dirt and peelings may be removed, should be closest to the receiving section. In this way meat goes to its refrigerator, to the butcher shop, to the meat cooking area (or back to refrigerator) and then to the service area. Vegetables proceed from their storage to the adjacent vegetable or salad preparation sections. Thus, the food enters at receiving and continues in as straight a line as possible through storage and preparation to service, whether this be cafeteria style, table service or some combination thereof. With the food in the dining area,the flow chart shows the beginning of a reverse in traffic as the garbage and dishes from the dining area must return - the garbage for disposal and the dishes for washing. If linens are used they too must be returned after use. It is quite possible, in multilevel operations, to have the dishroom located on the same floor as the receiving room and away from the kitchen, as at the University of Oklahoma. This plan does not break up the straight-line operation which started at food storage and continued through preparation or service.

PLATE 1—Main Kitchen Serves Several Areas


TAVERN
WOMENS TOILET
POWDER ROOM
MENS TOILET
CHECK ROOM
DISHWASHING
SERVICE AREA
CAFETERIA
TERRACE
FRANKLIN ROOM
BANQUET HELPS SERVICE
DIETITIAN
SALAD & DESSERT PREPARATION
HELPS DINING RM
FRUIT & VEG REFG
CHEF
DAIRY REFG
FREEZER
FISH REFG
POULTRY & FISH PREP
MEAT REFG
STORAGE
MENS TOILET
WOMENS TOILET
LOUNGE
RECEIVING PLATFORM
CAN WASH
TRASH ROOM
GARBAGE REFG
BEVERAGE REFG
STORE ROOM
ICE ROOM
LINEN STORAGE
MAIN KITCHEN
VESTIBULE
CHECK ROOM
MENS TOILET
WOMENS TOILET
WOMENS REST RM
STORAGE
JC
BANQUET SERVICE
BALLROOM NO 2
ICE CREAM
CHECK ROOM
REFG
BALLROOM LOBBY
BAKE SHOP
INTAKE SHAFT
TABLE & CHAIR STORAGE
BALLROOM NO 1
TE
PLAN OF GROUND FLOOR
BELLMAN GILLETT AND RICHARDS
ARCHITECTS AND ENGINEERS
TOLEDO - OHIO
SCALE IN FEET

Ohio State Union, Ohio State University, Columbus, Ohio

Space Allocations - - The general layout of the food service plant, following its flow chart, is worth little if it does not consider the myriad details involved. When a rough outline has been drawn up, scale plans and templates of all equipment should be arranged and rearranged with the progression of the menu items followed throughout the plant. Before the moving of such templates starts, the area in which they move and the type and number of various pieces of equipment they represent must be known. This brings up the decidedly important question of space allocation and equipment procurement. Like other portions of the union, the food area must be tailor-made to meet the local situation. Few acceptable standards exist in this field and a detailed study must be part of the early planning.

The scientific procedure for allocating space to departments within a mass-feeding operation is outlined briefly as follows:

1. Determine a basic menu pattern.
2. Estimate sales on menu items.
3. Assess peak load requirements.
4. Calculate food purchasing requirements based on estimated sales.
5. Ascertain the size, number and type of equipment needed to process the menu items.
6. Compute from specifications of equipment needed the amount of space needed to house this equipment.
7. Lay out the equipment in the various departments according to food flow analysis and machine use.
8. Calculate the amount of dishwashing and pot-washing floor space by considering investment, peak load requirements and basic menu pattern.
9. Determine allocation of floor space to dry and refrigerated storage from analysis of purchase requirements and decisions regarding inventory policies.
10. Allocate service area space by considering peak load requirements, patron needs, and type of service offered.
11. Estimate the dining room space by analysis of peak patron loads and average seat turnover during this period.
12. Ascertain the number of employees needed and their distribution in the various departments from study of hours of operation, peak production and serving requirements.
13. Calculate the amount of floor space to allocate for work and traffic aisles by studying equipment layout and employee duties.[1]

Contemplated operational practices determine much of the layout. Thus, if portion control purchasing is practiced with potatoes pre-cut for deep frying, hamburg already made into patties, meats and poultry preportioned, these items affect the root cellar, meat refrigeration and the butcher shop. The availability of daily deliveries as against less frequest deliveries impinges upon storage space, as does a policy of economizing through quantity purchasing.

A few of the many items to consider in the general layout include:

1. Placement of a scullery or pot-washing center in the kitchen and one in the bakery.

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[1] Peter Dukas,"Space Allocation in Mass Feeding" an unpublished master's thesis, Restaurant Administration Program, University of Chicago, summarized in Institutions Magazine, XXIX (October, 1951), p. 1.

2. Arrangement of the supervisory offices to provide good vision. Window walls and elevation of these rooms assist.

3. Prevention of cross-traffic. Keep the food moving in as straight a line as is possible. The use of pass-through refrigerators for salads and desserts, heated pass-throughs for hot foods (possibly infra-red heat), and pass-throughs for empty trays and utensils at the serving areas helps. Glass doors on both sides of the pass-throughs conserve on opening to check contents and, on the serving line, act as display cases. Coffee urns with two spigots,or piping to the serving area are helpful, as are intercommunication systems and dwarf walls (perhaps carrying utilities and piping) between departments. Waitress pick-up stations keep serving personnel out of the kitchen. A pass-through from root storage and preparation to kitchen prevents interference. Aisles should run both ways and work areas should be arranged in islands to prevent "end runs" around work tables. All aisles and doorways should be wide enough to accommodate mobile carts,with the meat area aisles wide enough for carcasses. Hand sinks and drinking fountains located in each section eliminate much traffic. Service corridors and stairways should be used if necessary to avoid using regular corridors for transportation.

4. Placement of freezers inside walk-ins where possible for economy's sake.

5. Allotment of an area or room for thawing frozen foods.

6. Inclusion of china and linen storage as well as storage for tools used in cleaning up spillage.

7. Location of compressors and similar equipment in easy-to-reach positions.

8. Possible construction of walk-in refrigerators next to each other, perhaps with two accesses -- one from receiving and the other from the kitchen.

9. Allocation of serving areas or pantries for all dining rooms, including storage where needed for linen and silver.

10. Possible use of labor from one area in another as work progresses. Thus, a dishroom near the root cellar permits some of the people to work in each operation, since these operations do not occur simultaneously.

11. Location of the loading dock on a large loading area, not on a street.

12. Placement of patrons' coat rooms and toilets near dining room entrances.

13. Location of the kitchen in the center of the dining areas to permit service in several directions.

14. Arrangement of enough area for purchasing control to eliminate paying for goods not received, underweight or of unacceptable quality.

15. Rectangular or square kitchens are most convenient. The length of rectangular kitchens should not be more than twice their width. Steps are saved if admission to the dining room is from the longer rather than the shorter side of a rectangular kitchen.[1]

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[1] West and Wood, op. cit., p. 553.

Safety

The safety requirements of the food area are more demanding than any of the union's other facilities. Here many people consume food, usually during many hours of the day and every day of the week. The safety problems which arise when any spot receives considerable traffic -- slippery floors, faulty chairs, congested areas -- are complicated by the ever present possibility that unsanitary food may be served with results up to possible epidemic proportions. Food spillage increases the slipperiness of floors and hot soups or beverages compound the possibility of burns. In nearly every union the food department employs the most help, hence offers the greatest threat to safety, particularly in light of the hazards which abound there. Precautions, therefore, must be taken to protect both the patrons and the employees from ingesting improper food, from various kinds of accidents, from poor health surroundings, from fires and from other hazards.

Sanitation -- In making the installation as sanitary as possible the standards of the National Sanitation Foundation should be met in all equipment. Soda and luncheon fountain and kitchen equipment manufactured and installed according to these standards is an excellent assurance that the whole operation can be a sanitary one.

Materials used throughout the food services should be as desirable and as easily cleaned as is commensurate with their utility. Stainless steel, properly fabricated, joined and installed, is excellent for work tables, storage shelves and similar surfaces. All floors should be grease and slip resistive, quiet, resistant to moisture and stain, and comfortable to work on. Quarry tile and impregnated terrazzo are excellent work floor materials except that their hardness makes for discomfort underfoot and often requires the use of duck boards or matting. Walls are both durable and easily cleaned it they are glazed tile, stainless steel, laminated plastic or terrazzo,and their bases should be coved, as should be the bases of all equipment installations. Screens on windows, self-closing screen doors and fly-repelling fans should be used to keep out insects. All utensils should be chipless, and such machines as saws, slicers or grinders should disassemble for cleaning. Stainless steel on the back of ovens and ranges and for access and drain covers make for easy cleaning. Spray faucets over steam-jacketed cookers assist in cleaning these fixed utensils. Rubber-covered rollers on conveyors reduce noise, and tray slides of single sections of stainless steel facilitate cleaning. Soundproofing metal tiles for ceilings which can be removed for cleaning are available and have much to recommend them. Each piece of equip-and kind of material that is incorporated into the food service area should be considered from its sanitary aspects. Details in the installation, such as running hot water in the dipper wells of ice cream cabinets, sneeze guards on display fixtures or screens on the windows, should not be overlooked. Careful supervision and inspection during the installation stages should be anticipated by the planning committee.

Keeping the food department clean is a "must," and proper planning adds much to the ease with which this is done. All work surfaces should be crevice-free. Splash-boards of work surfaces either should be set and sealed into the wall tile or set far enough away to permit cleaning behind them,and should be slanted to prevent the resting of objects on them. Wall-hung work tables facilitate hosing and scrubbing. Vegetable trucks should have rolled rims to prevent splashing during transit, and table edges should be turned up to prevent dripping. Storage lockers for emergency cleaning supplies which are used to clean up spillage should be located in the various areas and properly ventilated. Grease traps should be easily accessible,and live steam cleaning facilities built in to permit the cleaning of garbage cans, hoods, cooking equipment and the rooms themselves. Cabinet tops should be sloped to eliminate casual storage.

Accidents -- While sanitation of the overall food area demands much consideration, it is only one aspect of the general safety aspect. Accidents are apt to be numerous and affect both employees and patrons. Their prevention is easier if safety measures are built into the plant. Use of mobile equipment such as hand carts, platform trucks with jacks, wheeled mixers and conveyors, and wide aisles eliminates much of the lifting and carrying associated with the food work areas. Recessed radiators and rounded corners on all tables and sinks, level floors between areas leading into walk-in refrigerators, depressed handles and controls on drawers, ovens, refrigerators and similar equipment, and a special area for uncrating are some of the items which prevent trips, collisions and falls.

Fire protection and alarms should be readily available. Carbon dioxide extinguishers are prescribed, as they do not harm foodstuffs or electrical equipment. Large kitchens should have automatic carbon dioxide systems included in their hoods and ducts. Any incinerators should be well insulated and ventilated and separately flued. Vapor-proof lamps should be used in hoods, shower and dishrooms, and other moist areas.

Burns naturally occur in these work rooms and first aid provisions such as kits should be planned on in accordance with the institution's policies. All hot pipes should be covered and steam outlets properly marked or appropriately painted. Steam lines, tables and jacketed vessels should be inspected before being put into service, and hot trucks properly insulated. Controls must be included on dishwashers, deep fryers and steam cookers.

The floors, which receive considerable abuse from carts and trucks, spillage, crates, foot traffic and heat, must remain smooth and non-slip. Drains for cleaning and spillage should be installed near reach-in and in walk-in refrigerators, by ice machines, under fixed cookers, in all work and storage sections, and located away from main traffic and work areas. Any cement floors used in storerooms or receiving rooms should be sealed or painted for ease of cleaning and imperviousness to moisture. Since any durable, non-slip floor such as ceramic or quarry tile or terrazzo is apt to be hard on the feet of workers, rubber, plastic or cork mats may be used in front of work tables and at similarly often used stations. If these are anticipated the floors should be recessed to receive them, thus keeping them flush with the rest of the floor surface. The mats should be easily handled for cleaning both them and the area under them, and drains installed in the recesses make for easier cleaning. If duck boards are anticipated they should be hooked together in sections small enough to permit their washing in a washing machine. Hosing and scrubbing of work floors requires careful waterproofing thereof. In dining areas where appearance and acoustic properties are highly important and where such activities as dances, meetings or banquets may occur, wood, asphalt, vinyl or rubber tile is superior to the harder surfaces. Actually, there seems to be no ideal flooring for the food units. Hard surface floors are easy to clean, long lasting and serviceable but produce employee fatigue, lead to slipping and falling accidents, as well as dish breakage. Softer, more resilient floors wear out more easily and tend to absorb grease and dirt.

Lighting --Generally, the lighting in the food preparation areas should approximate that in offices and similar work areas, with fifty foot-candles of illumination available on working surfaces and twenty to thirty foot-candles elsewhere. Fifteen foot-candles in the dining rooms may suffice unless they serve other purposes also, in which case the requirements of these functions must be considered. The usual lighting principles concerning brightness contrasts and shadow-free work surfaces should be observed. Food areas are noisy. Sound-absorbing surfaces are necessities. Piping and ventilation ducts may serve as conductors of sound and should be thoroughly insulated to prevent the transfer of such sound. Reduction of the noise level is desirable not only for customer comfort but for employee efficiency as well.

Appearance

A properly planned, constructed and equipped food operation, if operated correctly, presents a pleasing appearance. The tile and stainless steel surfaces, well-drained floors, proper lighting and ventilation, neat storage, all add to the impression of immaculateness which is the first requisite of good appearance. Pleasing colors in tile or laminated plastic are available and the range of possibilities for decorating the dining areas is almost unlimited. Serving and display sections, waitress stations, china, silver, napery and draperies are only some of the items which can be utilized to improve the dining facilities' appearance. The whole food operation, from receiving and garbage rooms to private dining rooms, requires cleanliness if it is to be attractive,and all decorative schemes should observe this.

Expansibility

The expansion of existing food services requires increase in both dining and work facilities. Some growth in service may be achieved by lengthening serving hours, thus extending, to some extent, the turnover in dining seats; but the regulated schedules of college campuses is not apt to permit much flexibility here, particularly since some food services such as fountains, grill rooms and coffee shops operate continuously anyway. Building oversize to permit the addition of tables and chairs and the increase of use of kitchen storage and serving facilities appears to be a must for union building planners since, after proper layout, the next most important dream of union directors is that they might have more space and more and better equipment for food service. Here, at least, is a temporary measure to permit the expansion of service. The assessment of peak load requirements should be made with the future in mind. Acquisition and installation of all equipment need not accompany the opening of the original structure,but space for the addition of another walk-in refrigerator or oven or steam cooker or soda fountain will ease the problem which growing enrollments seem certain to present. Utilities, steam, water and ventilation systems must be designed with an idea for such growth,and the flow process must not be changed by added equipment.

If eventual expansion is to be achieved, as it was at the University of Oklahoma by the erection of a completely new wing, the relation of this wing to the original structure should be considered before the original plans are completed. Delivery areas, connecting corridors, food service to original lounges and meeting rooms, and the effect of new traffic patterns on various areas are some of the items to be studied. Obviously, the eventual use of evacuated areas should be at least partially determined. Expansion by adding to existing areas requires much of the same kind of planning,and caution must be exerted lest such things as cross traffic in the work areas or cafeteria lines, lengthy transportation of food, materials or dishes, loss of flexibility in dining areas, or duplication of equipment and facilities result. Expansion by adding a new facility, such as a banquet-ballroom or coffee shop, should make allowances for the additional storage, preparation and service demands. Expansion into an existing room should consider the same problems which apply to other kinds of expansion, as well as daking into consideration the original design and layout of this room.

Flexibility

The flexibility of the food services lies almost entirely in the dining areas, although the master kitchen should be able to prepare most of the food for all areas, whether they be banquet hall or grillroom. Examination of the Classified Facilities Table shows that the ballroom-banquet hall combination affords considerable flexibility and thus can accommodate many people over the course of a year. The soda fountain-grillroom-coffee shop type operation is also flexibile, although its size limits the number of persons served. Private dining rooms can be used for many events not connected with food, if they are situated so that they are somewhat isolated from the other eating areas. Folding and sliding walls, portable equipment,and flexible public-address and lighting systems permit diversity in use of this area.

Some equipment items like bake ovens may be shared by food preparation areas, particularly in small union buildings. Where this flexibility is necessary, these pieces of equipment should be located where they can be reached by the various workers without traffic interference.

The lack of flexibility of the food preparation areas points up the need for much careful planning. Service lines to sinks, ovens, steam cookers and other equipment, hoods over dishwashing and cooking sections, raised island bases, drains and similar hard-to-move items make later changes difficult and expensive.

Organizational Planning

The value of experts in food service layout is difficult to overestimate. The Illini Union, after only eight years' operation, discovered that a consultant was able to better their operating controls, improve their production and produce savings in labor. An expenditure of $8, 000 on equipment resulted in an annual saving of $12, 000.[1] Architects are seldom experts in kitchen layout,nor are most union directors. It is quite easy to slight the detailed planning at the food area until the rest of the building planning has proceeded so far that it interferes with a proper food layout. A commercial restaurant or hotel layout is not necessarily a good guide.

On all campuses there are persons engaged in food operations, and on many others there are those who are intimately connected with it, either in an administrative or teaching capacity. The knowledge of these persons should be put to use early in the planning, since the overall campus dining program usually affects and is affected by the union building. Much of the operating procedures such as purchasing and storage must be determined before the final blueprint stage.

Local menu patterns, eating habits, nearby markets, outside competition, banquet, and other special services such as private dinners, catering and carry-out, are important to the planners and are best determined with the assistance of those familiar with them. However, the sensitivity of the food business to labor and materials costs indicates that every saving possible should be incorporated into the original plan. A consultant well versed in the latest in methods and equipment should be engaged during the early planning and blueprint stages. Such a consultant may be available through the architect, but his ability should be well established. Many equipment dealers offer layout services, but since the primary reason for this service is salesmanship the objections to using such service seem obvious. The nearly ideal planning situation is one which brings the food director-to-be into the planning early.

Remembering that the union is "an informal educational medium" and that its building exists for "facilitating community life, " the planning group must strive to make the food area more than a mere working and eating station. Service must be rendered to as many persons and groups as possible as inexpensively as possible,while maintaining the degree of efficiency necessary to permit the completion of the financial obligation entailed. While there may be a strong temptation to place only food experts on the sub-committee responsible for planning the food areas, the union director and others conversant with the place of food in the union program and philosophy should be represented. Because food is usually served throughout the building, integration of the food area with the whole structure and program must be achieved, even if, despite recommended procedure, the food service is to operate independent of the rest of the union.

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[1] The Bulletin of the Association of College Unions, XVII (May, 1949), p. 6.

Food Area Components

An all-inclusive union food operation, embracing soda fountain and grills, cafeteria, private, women's, faculty, banquet and service dining rooms, coffee shop and commuters' lunchroom, includes many components in common with other food operations elsewhere, since the flow process is basically the same. Such components include receiving, storage, meat cutting, vegetable preparation, cooking, bakery, ice cream, salad, service (cafeteria counter or waitress pantry), dining, pot-washing, dishwashing, garbage and trash storage, maintenance, employees' facilities, rest rooms, coat rooms and offices. All unions neither need nor are able to afford such a comprehensive plant and only the largest can use all components. Certainly few small unions can afford to hire a butcher for a meat-cutting room, and many provide only refreshment services through a soda fountain or grillroom.

Only a few of the thousands of detailed considerations which should enter into the planning of the union's various food areas are herein mentioned. The need for expert advice has already been mentioned and little more than a general familiarity is intended for presentation here.

Receiving -- The receiving facilities of the food area need not be separate from those for the rest of the union building. If combined to serve all the other areas, they may permit the employment of a receiving clerk. A central storeroom for non-perishable items is quite feasible as well, and such arrangement may make it possible for even the smaller unions to use a receiving clerk-storekeeper. Obviously, both vertical and horizontal transportation is needed in such an operation and, since the frequency and perishability of food deliveries are high, the receiving room should be near the food service department. Its detailed requirements have been discussed in a previous section of this chapter.

Storage -- Storage in the food area includes dry stores or non-perishables, day stores, refrigerated stores, frozen stores, garbage and trash storage. Some may include several subdivisions such as freezers for meat, fruit, vegetable and ice cream or dairy, meat, fruit and vegetable refrigerators. The general observations concerning storage areas previously made in this chapter apply in large measure to the food sections, with some additional comments being here offered.

Before the dry stores room is planned its capacity should be determined by: (a) the number of food departments and their requirements, (b) the location (metropolitan, suburban, rural) of the institution, (c) the purchasing policy, (d) expansion plans. It should contain space for large unpacked cartons as well as shelf storage. Separate storage for grains and vegetables should be provided, the former well screened and the latter -- the root cellar -- dark and, if possible, opening into the vegetable preparation room. The closer the root cellar is to the receiving dock, the less dirt is brought through the building.

Day storage serves to hold dry food supplies from the central storeroom for a day or two and should be located in or next to the kitchen and between it and the storage room. In addition to shelving and space for sacks and cases, this space needs metal bins or canisters for cereals and other groceries.

The union food areas may have several different kinds of refrigeration, including cooler (40° to 50° F) storage for eggs, fruits, vegetables and dairy products; (35° to 40°F) storage for meats, poultry and seafood; freezers (0° F or below) for frozen foods, ice cream or ice; drinking water coolers; bottle coolers; reach-in coolers for day storage; display cases; soda fountains and, possibly, air conditioning. Separate condensers should be used for coolers and for freezers. Water coolers should be large enough to meet peak loads.

If refrigerated storage is part of the central storeroom, auxiliary or working storage is needed in the kitchen where it is accessible to all. Walk-through boxes between receiving and preparation areas make for a straight-line operation. Refrigeration units should adjoin each other wherever possible for reasons of economy. Freezer units located inside walk-in boxes are also economical to operate. Large unions, such as that at the Indiana University Medical Center, may wish separate refrigeration units for dairy products, meat, poultry, vegetables, salads and bakery goods, as well as separate freezers for meat, ice cream and vegetables. Floors of walk-in boxes should be level with the outside floors, and doors should have holders on their exterior where stock lists of their contents may be posted. Ultra-violet lamps may be installed if their germicidal action is considered worthwhile. Dripless stainless steel shelves should be used in walk-in boxes.

Preparation -- Meat-cutting rooms are found only in the largest union buildings. Those union plants which do incorporate such a facility should locate it between the meat refrigerators and the cooking unit, and near the receiving area. A double sink with drain boards, work table and meat block with mechanical saw, slicer and grinder and a scale comprise the equipment needed. In the vegetable preparation unit dirty vegetables are washed and peeled before going to the cook and salad units. Sinks for soaking and scrubbing are needed, along with vegetable peelers and choppers and work tables. Peelers should empty directly into sinks with a separate drain for waste. Spillproof and waterproof bin carts assist in moving vegetables to and from the preparation unit.

The cooking area is the heart of the dining service. Food and materials flow into it from the vegetable preparation, dry and refrigerated storage, meat-cutting and pot storage units, and from it to the salad, service, garbage and pot-washing units. The flow process which started at receiving and proceeded in straight lines to the various storage and preparation areas finds these lines converging again here. Location of the cook's unit at the end of these various production lines or in the center with the other units on the periphery of a U permits the orderly flow of food and materials with a minimum of cross traffic and interference. The basic cook's unit is a range with an oven and a cook's table four feet away, parallel with it and of the same length. As this unit becomes more complex it adds such equipment as deck ovens, steam kettles, steamers, broilers, fryers and mixers, and also a longer cook's table.

Expansion of the cook's unit with its utilities, steam and water lines, its ventilating ducts, its drains and its smooth work flow pattern is not easy unless provisions are made for it during the planning stage. While it may be possible to cut meat, wash vegetables and bake pastries earlier in the day and to wash dishes and pots later -- should increased demand on the food services make it necessary -- this principle cannot be applied successfully to the cook's unit, as much of the food produced here must be cooked in small quantities and/or served shortly after being cooked. Floor space left for added equipment with the additional outlets for the necessary steam, water, drainage and electricity or gas provided and with extended hoods installed originally, permits expansion of the unit merely by the addition of new equipment. A line-up of ranges, kettles and ovens may be installed with provisions for a similar line-up to back them up eventually. Another solution consists of a nucleus of such equipment, centrally installed so that it can expand both ways, thus keeping like equipment together after expansion. Additional room for cook's tables and storage should be allowed to permit the expanded facility to operate properly.

In addition to the general safety measures which should be built into the food area, there are a number which apply specifically to the cook's unit. Drawers, cutting boards and storage bins should be removable for easy cleaning. If four-foot aisles are used, carts must be maneuverable in them and around corners. A refrigerator for left-overs should be available for immediate storage, and hand sinks, soap, paper and receptacles should be handy to encourage frequent handwashing here as well as in the other food preparation sections. Filters, duck boards and cutting boards should be small enough to permit washing in the dishwasher, and a power driven rotary brush available for pot washing. Steam jets and water outlets should be easily available for cleaning. Mop closets should be ventilated, and garbage receptacles or grinders provided at each work station.

The efficiency and economy of the cook's unit does much to determine the success of the whole food operation, as nutritional, palatability, appeal and cost factors are determined here in large part. Situated properly in the flow chart, well equipped, expertly laid out and properly operated, it can be a model of efficiency and economy. Illustrations of some details which should be observed during the planning of this area include:

1. Modular equipment such as trays, cooking pans, refrigeration shelving and cold pans, permitting interchange and multiple use. Thus cooking pans, for example, slide into refrigerator slots for cooling and later are used for serving.

2. Suspended utensil racks over areas of use and possible mounting of such racks on wheels, permitting use at various stations, including washing room.

3. Piped coffee from urns to point of service, or double spigots, permitting rapid withdrawal.

4. Intercommunication stations at each work station.

5. Ample hot water supply or storage.

6. Knee or foot controls for sinks.

7. Adequate indicators on equipment, as well as automatic temperature controls.

8. Adjustable heights on work tables.

9. Prominent employees' bulletin boards.

10. Adjustable shelves for pot storage.

11. Slide-out platform or steps under coffee urn stand.

12. Elevated ice machine with cart room underneath.

13. Electric outlets in work tables.

14. Slicing and mixing machines on pedestals and dollies for mobility.

15. Water lines and faucets above ranges and steam kettles.

The baker's unit is very sensitive to the menu and purchasing policies. Since the variety of desserts, pastries and breads to be prepared here determine its size and equipment, this menu should be particularly well thought out. For example, if bread is to be purchased commercially,this should be determined early. If the baker's unit shares equipment such as pans or mixers with other units,it should be near them; otherwise it need not be as close to the cook's unit as are the meat and vegetable units, as it usually feeds directly to the service areas. This means that it can be farther from the receiving and storage areas than the other preparation areas,and closer to the point of final consumption. Its basic equipment includes a deck oven, proof box, mixer, stove, steam kettle, pastry and bakers benches, refrigerator, landing rack and pot storage, and sink. Its areas should provide room for opening of oven doors, wheeling of carts and swinging of the bakers peel from oven to landing rack. Examples of some details to consider in its planning include:

1. Mobile flour and bulk supply bins and spice racks.

2. Mobile landing racks and mixer.

3. Freezer for dough retarding.

4. Rotating or reel ovens.

5. Shallow ovens to ease cleaning, eliminate the peel and reduce burns.

The salad unit receives its materials in the form of canned goods, cooked fruits and vegetables, cheese, and fresh fruits and vegetables. Dry and refrigerated storage, cook's unit and the vegetable unit all supply it,but fresh fruits and vegetables are the primary source. Its location is very important. It should be easily accessible to permit efficiency in supplying it on a straight line between its primary supply source and the service or refrigeration point, and as near to this point as is possible to permit the briefest transportation time. A pass-through refrigerator connecting the service point and the preparation area offers an ideal layout. Such a refrigerator can serve as an attractive display area if it is equipped with a glass door on the service side. The preparation unit should work from left to right toward the pass-through refrigerator. A glass door on this side of the refrigerator is helpful in checking on its contents without opening the door.

Essentially, the salad unit is a sink, refrigerator and table with room enough for arranging the salads. A mixer and a chopper should be available, as should be refrigerated storage for ingredients, garnishings and dressings. Plenty of ice and cooled plate dispensers assist in serving the salads properly, as does a long ice-filled trough in the center of the work table for the holding of prepared salads prior to refrigeration. The salad unit, with the addition of a sandwich table, can be used for sandwich making.

Ice cream usually is made in the bakery or next to it (as in the Ohio State and Indiana University Medical Center Unions). Refrigeration, both dairy and freezing, is needed along with the ice cream freezers, work tables, flavoring and coloring racks, day storage and container storage.

Service Areas -- The service areas are directly between the various preparation areas and the dining areas in the flow chart. They are usually the places where the food is placed on the individual plates and distributed, and may take the form of a cafeteria counter, a serving kitchen or pantry, a waitress station, a serving counter in the kitchen or a station in a short-order kitchen. In this area food must be kept hot or cold and dishes stored. Dispensing of food occurs here for consumption in the dining area. Refinements and variations of this basic operation differ according to the type of food service being offered.

The prepared food in larger union buildings may go in several directions from the central kitchen. Cafeterias, counters, banquet service kitchens, soda fountains, coffee shops, employees' cafeteria counters, private and public dining room kitchens, and commuter lunchrooms may all be served (as they are in the Ohio State Union) from this single area, with auxiliary food preparation completed at the serving scene.

Supplying food to these service areas calls for various kinds of transportation. Cafeterias demand a rather steady stream of food for two or more hours at a time, while banquets and private dinners demand that all persons be served nearly simultaneously. Public dining rooms, coffee shops and soda fountains require more individual service. Thus, cafeteria counters utilize hot tables for dispensing food, often from the pan it was cooked in. Frequent replenishment is obtained from pass-through windows, refrigerators or warming boxes, and used pans are returned in similar fashion. Single order meals, as served at banquets or many private dinners, often are placed on the plates in the serving kitchen and carried to the dining area in electric warming carts. Coffee shop and soda fountain and grillroom service may combine preparation to order with previously prepared salads, soups or vegetables, and requires some hot and cold food storage as well as cooking equipment. These areas can be served by pass-throughs or food carts.

Cafeteria counters may be many shapes and sizes. There may be single lines, as in Bowdoin's Moulton Union, double lines (Indiana University Medical Union), double lines converging on a single register (Oklahoma A. & M. Union), triple lines (Ohio State Union), or hollow square arrangements (Michigan State Union). Their length depends upon the number of patrons expected, the seating capacity of the dining room, peak periods and speed of service. Tray slides should be 12 inches wide, counters at least 2 feet wide with a 4-foot work area available between the counter and the backbar, which itself should be between 2 and 2-1/2 feet wide. Such items as dish, glass and tray dispensers -- perhaps heated or cooled or both -- food and equipment pass-throughs, piped coffee, automatic milk dispensers, separate water, condiment and, perhaps, silver stations, tray wells, handy menu boards with common items cast as words, expedite service. If banquet or table service is to be rendered from the cafeteria counter, extra room or a detachable serving rail for waiting plates is needed.

In addition to the food which is to be dispensed -- hot, breads and sandwiches, salads and desserts, beverages and ice cream -- there remain silver, trays, napkins and glasses. The cafeteria counter is also a display counter and should be satisfactorily lighted. Each part of the counter should be in a straight line with its pass-through, so that, for example, salads move directly to their iced compartment from their pass-through and hot foods go directly from the kitchen to the steam table. Salads and cold meats, hot meats and vegetables, desserts and beverages require about the same display space. If the ice cream cabinet and the beverages are installed in the serving counter, they will permit persons working the line to render service without turning around. Glass sneeze guards which swing for easy cleaning should be installed at all food stations for safety's sake, and some means of securing the pass-throughs to prevent pilferage during cleaning and other non-operating hours should be adopted.

The collection of money should not hinder the cafeteria line. Sufficient register and/or checking stations should allow rapid payment, and an extension of the tray slide permits persons replacing change in wallets to move out of the way. Comfortable heights should be arranged for cashiers, with counter wells used if indicated. Electric outlets for registers should not be overlooked when the registers are being located. If the cafeteria in a small union is to serve as a refreshment bar at times, or vice versa, it is possible to have laminated plastic sections fabricated which fit over the tray slide, so that, when used with movable stools, a degree of flexibility is achieved.

Many unions do a brisk take-out business with coffee, sandwiches and similar refreshment being purchased for consumption outside the building. Much of this business occurs late in the evening when food is taken back to living units for consumption during study hours. The soda fountain-short order facilities with their long operating hours and particular menu are best equipped to handle this operation, and should have room for storage of paper cups, bags and similar containers. The existence of competing diners or lunch rooms determines much of the popularity of such an operation. Located in a somewhat isolated community, the Hetzel Union of Pennsylvania State University instituted such a special service as an adjunct of its Lion's Den. It also serves those planning picnics or motor trips.

Waitress stations require at least table space, a water supply and sink. Storage for linen, china, silver, glassware, condiments, and dispensers for ice, ice water, cream and butter may be located here. Bun and coffee warmers may be desired and should adjoin service pantries. These are, in many respects, similar to cafeteria storage sections and provide for quick assembly of orders. Heated and cooled dish and glass dispensers improve and speed service. Banquet kitchens may contain, in addition, ice cream cabinets, coffee urns, sinks and refrigerated units for salads and butter, and some may have their own garbage disposal or dishwashing facilities. Storage of china, linen, silver and crystal, as well as chairs, tables and carts are needed, and some may be arranged for in carts with dispensers. Experimentation with storing precooked dishes, already on plates, in hermetically sealed storage vaults indicates that banquet meals may be prepared several days in advance. Such a system is now in use at such top-flight resort hotels as the Boca Raton and The Greenbrier, and may bear investigation by union building planners.

Telescribers, which duplicate the written orders of waitresses or attendants automatically, may prove useful at waitress stations and short-order counters, as they provide irrefutable evidence of each order, thus eliminating many possibilities of error while giving a method of checking sales closely.

Serving pantries which service meeting rooms and lounges where only refreshments for receptions or after meetings are to be served require a sink, work counters, space for a hand truck, a garbage and refuse container, and some storage room. The size of the latter depends upon whether napery, dishes, service sets, punch bowls and similar items are kept there or moved in each time. The conveying of food and dishes to, and garbage and dirty dishes from such pantries must be arranged for in the original planning.

Soda fountain and grillrooms are really miniature food preparation centers. They receive, store, prepare, serve and dispose of food, have records to be kept, supplies to be purchased, personnel to be supervised and cleaning to be done. Many aspects of the flow chart may be limited when central kitchens furnish much of their food ready for preparation, store their goods and, perhaps, wash their dishes, but the general principles remain. Most of the food preparation is done to order, and the operation usually extends through most of the union's service day.

Dining Rooms -- Despite the amount of planning, money and space which is devoted to the food preparation and associated areas, most union patrons judge the whole plant by the public spaces, particularly the dining and serving areas which they use and see. The tone of the whole food operation can be established by the dining rooms, and much of the total union atmosphere depends upon this tone. Certainly the effect of tasteful surroundings on a meal cannot be overlooked.

The variety of food service rooms offered by unions permits a wide range of treatment and decoration. Nearly any sort of atmosphere desired can be created by the architects and decorators, and the planning committee must be prepared to issue instructions concerning the environment it wishes to create in each of its dining rooms. Table service in the Illini Union's exquisite ivory and blue Wedgewood Room or the richly panelled Oak Room of Iowa State's Memorial Union approaches the ultimate in dining surroundings. A soda under the murals in the Corn Crib of the University of Nebraska's Union building is consumed in an atmosphere that could be only Nebraskan, while a beer in Cornell's Ivy Room recalls the university's long tradition and its "Ivy League" connections by the uniqueness of its furniture and decor, complete with many collegiate banners. The atmosphere of Wisconsin's Rathskeller suits its name and university perfectly, and the cafeterias of Pennsylvania State's Hetzel Union or the Ohio State Union, with their sunshine bright colors and airy spaciousness, bring new pleasure and warmth to mass feeding. The snack bar-lounge arrangement of the union at the University of North Carolina sets a new high in functional informality, and its colored plaster murals (the only ones in the world) offer excitingly new esthetic experiences for the students. The banquet rooms may be formal, like Oregon State's or Illinois, or warm and inviting like Pennsylvania State's or the University of North Carolina's. There is no real reason why a dining room cannot express the campus and university spirit and personality, or convey a sense of dignity, hospitality and friendliness. Art work, photo-murals, decorative draperies, printed paper napkins, engraved silver, embossed napery, monogrammed uniforms, distinctive china and college colors are only a few of the devices which can lend distinction to the various places.

Floors can do much to determine the atmosphere of the dining areas. Extensive carpeting indicates that a quiet, well-served meal is to be expected, while a replica of the university mascot in asphalt tile is more fitting in the grillroom. Dining or banquet halls which may be used for dancing probably are best served by hardwood floors, such as maple or oak, since their warmth and beauty, resiliency, cleaning, wearing and repair qualities give them the edge over other materials. Terrazzo and asphalt tile, while often used in such spaces, lack the soft beauty and resiliency of wood, but are quite serviceable.

Basically, the function of the dining room is the housing of eaters. If this were its only function, the most economical and efficient way to fulfill it would be achieved by using long tables with stools stored under them and with one large room used for all eating. Since some of the union's education and service programs are carried out in the dining areas, they must do much more than just house eaters. In addition to eating, card and chess playing, dances, carnivals, entertainment, concerts or recitals, radio forums or speeches may occur in them. They may house displays or serve as polling places. Meetings and private parties may take place in some of them, classes in etiquette or homemaking in others. In some. conferences or conventions for hundreds may be occurring simultaneously with intimate tête-a-têtes in others. Therefore, more than mere feeding stations the dining rooms are really gathering places for people. They are important in bringing students, faculty, alumni, staff and the public together, and they further the unifying concepts of the term union.

The variety of dining facilities found in the larger union buildings attests to the variety of dining functions demanding service. There are the soda fountains or snack bars where a quick bite or cup of coffee may be obtained or where acquaintanceships are made and friendships cemented. This, more than any other single spot on campus, is apt to be the gathering place. Smoke, "juke box" music, laughter, conversation and crowds typify it,and informality is its keynote. The coffee shops offer informal dining, with or without table service, for a relaxed meal or casual entertaining; the cafeteria provides the low-priced three meals a day; and the dining room, with its linen, service, crystal and other fine appointments, is the place for a full-course meal, special date or folks from home. The banquet hall provides for the numerous student, faculty and other organizational dinners that occur throughout the year, but which abound each spring, and the private dining rooms cater to luncheon or dinner meetings for groups, classes, guests or others.

The average dining table is 30 inches high with 24 inches of table space allowed per person. Dining-chair seats are usually most serviceable when 18 inches from the floor. Booths should meet these dimensions with sufficient room between the table and booth to permit patrons to get in and out easily. Dining room circulation is aided if many small tables are used seating four to eight persons, and social intercourse seems to be encouraged thereby. Small tables seating two persons (deuce tables) in the service dining room are economical of space and may be placed together to accommodate more people.

Because the dining areas do not require as many utility and plumbing changes as do most of the other food areas, it is somewhat easier to extend them into other spaces. Their relationship to serving stations and dishrooms should not be forgotten, however, and original planning must allow for this when considering the expansion of food facilities. Ventilation, lighting, public address, sight lines for banquets, table and chair storage, coat and book storage, serving room, rest rooms, accesses and exits, are among the items to consider when adding to the dining spaces.

The flexibility of the dining spaces in existing unions attests to the possible versatility which can be built into them. The eighteen private dining and meeting rooms at Ohio State are so arranged with folding walls that they can accommodate small luncheon meetings, large dinners, exhibitions, conferences, or other events in nearly any combination. At Michigan State, as in most other large union buildings, the ballroom houses banquets, receptions and similar functions. At Pennsylvania State the Lion's Den serves as both a refreshment area and a card room, while at Wisconsin the Rathskeller is not only a refreshment center but, often, also a night club. At El Camino Junior College the cafeteria dining hall with its parquet floor and limed oak walls doubles nicely as a dance hall.

Using dining spaces for a variety of activities requires a few basic considerations. Fixed equipment, such as tables and chairs, supporting pillars or water fountains, should be kept at a minimum or on the periphery. The use of the six-seater booth, so dear to the gregarious student, in the grillroom or soda fountain should take this into consideration if dancing and entertainment are to take place there. Lining the walls of the room with such booths but leaving the center clear for movable tables and chairs presents the desired flexibility. (Space is needed for storing these tables and chairs during dancing.) Folding equipment for banquet and private dining rooms makes for more flexibility,and stacking chairs in other more widely used dining rooms may provide a solution to this storage problem. Sliding or folding walls help, as does a diversified public-address system with plenty of outlets located wherever head tables may be stationed.

Layout is most important in attaining flexibility. Banquet-ballroom combinations which are arranged in T or L shapes to permit expansion by means of sliding or folding walls (preferably mechanized),should have the serving pantry or kitchen located on the acute side of the angle to allow independent service to either or both rooms. Transportation of dishes and other equipment from private dining rooms should be rapid to permit these areas to be used again. The larger areas like the cafeteria hall or banquet room should have dividing walls, even though their divided use by campus groups is not anticipated. Such division enables conferences and conventions to take advantage of these facilities during vacation periods. Portable platforms and a public-address system help. Moldings for attaching decorations or hanging art work should run around the walls of the larger rooms. Closing off work spaces and cafeteria counters with folding walls permit continuation of work in those areas while removing some of the institutional appearance. Flexible lighting is needed to accommodate the various functions, with extra lighting near the proposed site of speakers' tables. Spot and colored lights are needed for any area which is used for dancing or entertainment. Piano storage is desirable near all of the dining rooms.

With various combinations of dining and banquet rooms being used, uniform furniture in such areas permits interchangeability. If differing color schemes are used in the various rooms and chairs are chosen for each scheme, attention to their combination in a large group allows them to be used in the various rooms while obtaining pleasing color effects. Thus, the same folding chair upholstered in different colors for the banquet room, private dining rooms and meeting rooms can be used for mass seating in the banquet room during a concert or performance or as auxiliary seating in any of the other areas, providing the colors are not antagonistic. One color, chosen to blend with all the color schemes, offers a simpler, if not quite so colorful solution.

Catering to teas, receptions, meetings and similar affairs demands service sets ranging from elaborate silver tea, coffee and punch sets to simple, durable stainless steel or other cheaper combinations. A uniform design, perhaps with a crest or seal, on the various pieces permits combinations of sets to achieve the proper capacities and to meet the fluctuating demands for service. Naturally, silver, steel, glass and other sets should each be large enough to eliminate the necessity of mixing them.

For safety reasons, as well as convenience and efficiency, the dining rooms should have wide, well-lighted accesses. The number of people using them, often at the same time, as in the case of the cafeteria, requires that the dining rooms handle crowds, and that these crowds be able to leave quickly and easily during emergencies or, of course, normal times. The recommended first floor location eliminates the need for stairs, and the possibility of cafeteria lines extending up or down them. Cafeteria lines should not extend to doorways, since they will keep these doors open and cause congestion with those leaving. Non-slip flooring is most important in these areas since the carrying of trays or dishes renders patrons and employees less able than usual to catch themselves and more likely to be off balance. Protuberances, sharp corners, uneven floors or carpets, or inadequate aisle space present hazards to the unwary tray bearer or cafeteria-line occupant. Separate one-way exit and entrance doors should connect dining rooms and serving kitchens, and these should swing away from persons using them, with the swinging arc protected by a barrier. Windows in the doors and automatic door openers assist in preventing accidents and the latter, if connected with fly repelling fans, help to keep insects from entering. Similar arrangements on the dining and other entrances are recommended, and all doors and windows should be screened. Ventilation must be adequate to remove smoke and heat, particularly from the soda fountain, grillroom or whatever other refreshment area is expected to be the campus gathering spot, since crowded inclement evenings are almost certain to find steaming jackets, smoking cigarettes and human beings confined in a room with closed windows and possibly a functioning heating system. Acoustic treatment is a must to keep dish clatter at a minimum and to prevent the overall noise level from becoming unbearable.

Certainly the dining areas must be kept clean, not only for sanitary reasons but also for esthetic and educational ones. Handy slop closets should be installed to permit prompt cleaning of spillage. Walls should have coved bases and chair rails and should be easily cleaned. Tables should be stain and crevice-proof with cigarette-proof laminated plastic tops and sides being excellent for this purpose. Chairs, folding or standing, should be easily cleaned, be as impervious as possible to stains and burns, and sturdy enough to withstand the strain or pushing, tilting and moving. Bentwood or aluminum frames are good, and molded plastic seating promises much in combining the qualities of strength, attractiveness, comfort, durability and cleanliness. Fixed booths should be open to permit cleaning under them, and their accompanying tables should be free-standing for cleaning as well as for easier entrance and exit. At least ten foot-candles of light should reach the table tops and, as well-served food is attractive, its appearance may be enhanced by a greater intensity of illumination. Private dining rooms and other eating spaces which may be used for meetings or conferences should have a minimum intensity of thirty foot-candles available. Controls should permit concentration of light wherever desired, as in the banquet rooms by the head-table or the entertainment center in the grillroom, if such is contemplated.

Some conflict exists between the commercial and social aspects of the union's food operation. In such areas as the soda fountain room the turnover of seats represents additional sales, yet, since the union is interested in fostering friendliness and social interchange, it has some obligation to foster dallying. Practical seating, easily cleaned and moved, comfortable but not luxurious, seems a reasonable goal towards which to strive.

Long, narrow dining rooms present lengthy service and bussing problems, and so centrally located service points and dish windows make for shorter carries for both patrons and employees. If conveyors must be used to return dirty dishes to the dish room and if patrons are expected to bus their own dishes, the dishroom may well be placed near the exits.

Walls receive considerable wear in the dining areas. Hand trucks, tables and chairs strike them or rub against them. Grease from the hair of persons leaning against them often cause soiling, and cafeteria lines soil them by chafing and by the leaning of shoulders, hands or feet against them. Wainscoting which withstands cleaning, abrasion and impact is indicated, and since attractiveness as well as physical properties are required, ceramic or glazed tile, laminated plastic or one of the newer flexible plastic wall coverings should be considered.

Separate entrances to the various dining areas save wear on the rest of the building and may be desired. They do, of course, reduce the chance of physical exposure to other parts of the union building and program, and increase control and security problems. Rest rooms and coat or check rooms should be located near the entrances. Costumers may be needed in the soda fountain and other drop-in eating areas. Book storage near the entrance may be desirable on some campuses; others may wish a chair like that at the Ohio State Union which has a book rack underneath it. Seats at counters may solve the problem of book security by having a book shelf under the front of the counter top, and purse rails or hooks are handy for womens handbags. Removable counter fronts make repairs to soda fountain equipment easy as does the inclusion of plumbing in the California step (foot rest). Commuters' lunchrooms should have at least a pass-through window and cash register from a short order or soda fountain for soups, milk and the like. Bag lunch lockers should be ventilated and plenty of waste receptacles with swinging tops should be available.

Dishwashing -- Since water is used for cleaning, cooking and steam, the investigation of local water conditions for minerals and other impurities is advisable. A water conditioning system may represent an additional original expenditure, but in terms of efficient operation and eventual replacement and repair bills it may be economical.

Pots and pans should be washed near the area in which they are used, making prompt washing possible, removing the dirt more easily and returning the utensils to service early. Separate pot-washing units should be available for bakeries and cook's units since grease from the latter interferes with cleaning the pots of the former. Three compartment sinks permit separate soaking, washing and rinsing, and each sink should be large enough to hold the largest pots expected. Some thought might be given to using a mobile soaking cart to stand by a working area for immediate use and easy transferral to the washing sink when convenient. Mobile storage racks assist in moving pots and pans back to their proper location after washing and drying. Drainboards should be located on either side of the sink line-up, and a power rotary scrub brush with long cord helps in cleaning. Storage space for detergents and small equipment is needed, and some thought should be given to installing steam coils in the sinks for conservation of hot water.

Dishwashing can be considered as a part of the garbage disposal process since it consists of removing all refuse which has accumulated on once clean and sanitary dishes. The processes connected with dishwashing include moving the dirty dishes, silver and glassware to the dishroom, scraping the refuse from them where necessary, pre-rinsing them with a spray or circulating bath, washing them, rinsing them and drying them. When completed they should be completely sanitary with all stains, lipstick marks or food particles removed, and should remain this way until servings are placed on them again. To attain such a degree of cleanliness, the dishroom needs excellent operational procedures as well as equipment. The size of the food operation, of course, determines the size and complexity of the dishwashing chore, but some sort of mechanical washing and rinsing is almost a requisite because of the need for rinsing with 180° F water, which makes rinsing by hand most difficult.

The flow process through the dishroom calls for a straight line or modification thereof, with the end of the line being near the dish storage point. Some installations may send dishes and silver in one direction around a hollow square, and glasses, washed separately, in the other direction, with both ending up near the storage point. Larger, multiple machine units may find movable bridges which fit across dish tables useful in diverting dirty dishes from one machine to another.

The dirty dish table should be located where dishes may be returned to it easily. In large union buildings there may be several such collection areas with conveyors of some sort feeding into one or more dishrooms. If patrons are expected to carry their dirty dishes to the dirty dish area, this area should be long enough to permit a number of them to do so at one time, lest indiscriminate piling up create breakage and appearance problems. The dishroom itself should be separate from the other areas to confine the noise which originates there, and it should be as soundproof as possible. Hoods should remove all steam and keep the room comfortable for the workers. Lighting should permit proper inspection of all washed utensils, and any additional drying needed should be done by blown hot air rather than unsanitary toweling. All portions of the room and its equipment should be easily accessible for cleaning. Free standing tables and machines are recommended.

Consideration should be given to washing glasses in the same racks in which they are distributed, such racks fitting both the washing machine and glass dispenser. Facilities for pre-soaking and hot rinsing of silver are desirable, and a chute into the pre-soak sink assists in speedy removal of stains and stubborn refuse. The clean dish table should be long enough to permit dishes to dry before stacking.

In addition to the dish tables themselves, the minimum equipment for a dishroom of any size includes a dishwashing machine, a prerinse sink and spray, tray wash sink, glass washing brush and sink, and a dish truck, with storage and floor space for the latter.

Storage for equipment and detergent is needed and clean dishes may be stored in this area.

A description of one large union dishwashing operation (Michigan State University) follows:

> Dishwashing incorporates four sections: silver, glassware, china, trays. A moving conveyor belt carries the soiled equipment to the various stations. At the first section the glassware is removed and washed in a Lofstand glasswasher. An attached section blows cool air over the washed and sterilized glasses so that they can be taken directly back to the dining room for use. The second section is for silver and a Foley silver washer and dryer is used.
>
> At the china take-off dishes are first passed through a Salvajar for removing excess soil. A standard Colt two-tank machine is used for washing with an electronic dispenser attached to control the proper detergent percentage. A new Colt dryer is attached to the dishwasher and performs the work of drying the dishes. Dishes are then transferred directly to heated Lowerator units and are returned to the serving areas. Accordingly there is no hand toweling which eliminates a considerable amount of labor.
>
> Trays are washed by hand in a special compartment sink if soil is not excessive. If excessive they are washed in the dishwashing machine.[1]

Garbage and Trash -- Garbage and trash storage and collection are apt to present a problem to a union which operates night and day for seven days a week, as a few missed collections may find the union building bulging with refuse. Incinerators and garbage grinders solve much of this problem, although they do present operational ones of their own. Since some irregularities in collection, particularly over week ends or holidays, may be anticipated, garbage and trash areas should be large enough to handle more than the normally expected amounts. If the whole union building is to deposit its trash in the same place, its capacity must be increased to handle the whole lot and the kitchen should not be the only access thereto. Often such collection points are adjacent to the receiving area to permit trucks to use the drive and loading platform.

A refrigerated garbage room eliminates odors, provides better sanitation and keeps animals, flies and insects away. If outdoor garbage storage is necessary, screening and fencing should enclose it. Either area should have a cement or other non-porous floor, properly drained, with hot and cold water, and steam jets available for cleaning the area and for washing cans. Larger union buildings may also need a separate can-washing machine and trough housed in a separate room. Tile or stainless steel walls in these areas make cleaning easy, and acoustic ceilings keep down the noise level. The garbage room is easier to use if it is a push-through type, opening into the building on one end and onto the loading platform on the other. Scales may be desired for weighing the garbage.

Janitors' Closets -- The food service area needs janitors' closets which should be similar to others in the building. In addition, it needs mops and brooms for the occasional cleaning which follows spillage and breakage. Small, well-ventilated closets near slop sinks or troughs, equipped with the necessary hooks or racks for hanging and a shelf or two for small storage, should suffice for these. Each work area should contain such a unit to encourage workers to keep their areas clean.

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[1] *Bulletin of the Association of College Unions,* XVII (December, 1949), p. 7.

Linen -- The linen requirements of a union building vary according to its type and scope of service, amount of business and number of employees. If a large hotel unit is part of the building,it may be desirable for the union to purchase, wash, store and mend its own linen, in which case a laundry, storeroom and serving room are needed; while a small union may prefer renting uniforms and other linens from a linen service, thus eliminating, for a price, all linen problems except storage. Clean linen storage requires little more than shelving and some sort of control to prevent pilferage. Soiled linen attracts vermin and should be kept in covered fireproof hampers or cans. In a union operation where student employees may work only a few hours at a time, space often must be allotted for the hanging of uniforms which are worn again prior to cleaning. The soiled linen storage area should be well-ventilated and near the loading platform.

Employees' Facilities -- Some facilities are needed for the food employees, the extent of which is determined by the size of the operation, number of employees, labor union demands and local conditions. Since it is not desirable that they work around food in their street clothes, locker rooms with lockers large enough for uniform changes are needed, although such a locker room may be the one used by all building employees. Toilets and wash bowl should be provided,and showers may appear desirable in some situations. Separate rooms are needed for men and women,and large units may wish to have separate facilities for supervisory personnel. Such rooms should be near the employees'entrance and each should have a lounge area for rest periods and smoking. A cot or two in these lounges is desirable. If the locker rooms are not near the working areas,toilet rooms should be located nearby which meet the requirements of such rooms in the rest of the building, including makeup tables for women.

Since food employees are busiest during meal hours,many of them may not be able to eat at the usual time. Policies involving employees' eating should be established prior to the final approval of building plans. If meals are included as part of their remuneration and eating is done on union time,an employees' cafeteria or dining room may be necessary, while the usual hour off for mealtime and no free meals may result in food employees eating in the same fashion as the other university employees.

Offices -- The offices of the food director and his staff should be similar to other offices in the building,except that supervisory personnel occupying offices in the food areas are able to function easier if they can look through glass walls into as many different areas as possible. The elevation of such offices and use of dwarf walls between units help, and ventilation or air conditioning must be provided. A complete intercommunication system connecting all food areas is a necessity,and communication with the rest of the union building should not be forgotten. Files of the proper size for recipe filing deserve consideration. Time clock, racks and cards probably are located near here or near the employees' entrance.

Equipment -- Specifying equipment is a job for experts, but knowledge of what is available and being done is invaluable to the planning committee. Visits to large and small food operations, review of trade publications, textbooks or studies, and attendance at hotel and restaurant shows are some of the ways in which the committee members can familiarize themselves with the general nature of what is to be done. The often adopted method of purchasing equipment wherein a purchasing agent (expert in his own field but not versed in food service) calls upon equipment dealers or manufacturers (also not food service experts) for assistance, only to end up with conventional amounts and sizes of equipment not able to meet efficiently the union's needs, is a method to be deplored. A complete analysis of the projected menu plans and the equipment required, for or in concert with a food consultant, by campus experts, or by the union food director does much to assure proper equipment. It should be remembered that this equipment to a large extent determines the size, shape and location of all the food areas, and that the determination of requirements should not be permitted to lag. Information for preliminary planning on sizes and space requirements for kitchen and dining equipment and furniture may be found in architectural handbooks. New methods of and devices for food preparation, such as infra-red or charcoal short-order cooking, should be watched and evaluated to assure that the kitchen is as modern as possible at the outset.

The cost and importance of the food area demands much of the planning committee. It must provide detailed information for the consultants and the architects. The campus needs should be carefully determined and as carefully met. The results are well worth the time, thought and expense involved. Space allocation depends upon too many variables to permit the derivation of a formula. However, for assistance in preliminary planning and with the warning that they should not be used for anything beyond that, the following statistics concerning a union are presented:

> Operating data: The Union's (Indiana University Medical Center Student Union) snack bar is open 16 hours a day, 7 days a week, during which time approximately 5, 100 meals are served. The cafeteria is open 6-3/4 hours a day (6 to 9 a.m., 11 a.m. to 1 p.m., and 5 to 6:45 p.m.), 7 days a week and serves approximately 15, 000 meals. Banquet service requires about 525 meals per week. The entire food operation accommodates a maximum of 917 persons at one time.

	Storage Area
Staples	
General	3, 552 sq. ft.
Bakery	77 " "
Ice Cream	48 " "
Dairy	42 " "
Snack Bar	32 " "
Banquet Kitchen	60 " "
Walk-in Refrigerators	
Garbage	90 " "
Bakery	50 " "
Ice Cream	40 " "
Meat	131 " "
Poultry	48 " "
Dairy	165 " "
Vegetable	312 " "
Salad	96 " "
Cook's	42 " "
Zero Refrigerators	
Ice Cream	350 cu. ft.
Meat	270 " "
Frozen Food	1, 600 " "

	Kitchen and Dining Areas
Bakery	896 sq. ft.
Ice Cream Room	308 " "
Meat Preparation	296 " "

Vegetable Preparation	322 sq. ft.
Dishwashing	1,280 " "
Ice Room	72 " "
Salad Preparation	320 " "
Main Kitchen	2,480 " "
Cafeteria Serving	1,344 " "
Cafeteria Dining Room	6,527 " "
Snack Bar	2,340 " "
Banquet Kitchen	1,104 " "
Private Dining Room	2,660 " "[1]

Some other rule-of-thumb statistics follow:

Kitchens, exclusive of receiving, storage, dishwashing and employee spaces, occupy one-third to one-fourth the area of dining rooms.

University cafeterias average 15 square feet per seat, including serving area. The serving area is one-fifth to one-seventh the size of the dining room or about 1-1/3 square feet to each seat. The average counter length is 30 to 32 feet.

The minimum scullery size is 40 square feet. Small institutions may require up to 3/10 square feet per person fed, while large ones may reduce this to 1/10 square feet.

QUIET AREAS

All the quiet areas of the union building need not be connected, but they should be isolated from the noisier sections such as kitchens, workshops, or game areas. Actually, quiet areas subdivide quite easily by function to permit separation. Thus, the living quarters such as guest rooms, guest dormitories or commuters' sleeping rooms should be separated from the busier lounges and meeting rooms, and their combination permits more efficient operation, supervision and housekeeping. Student activity areas (rooms with desks and files not permanently assigned) and student offices (permanently assigned spaces) should be together for ease of communication and supervision. The facilities for day students, if they are distinguished from those normally used by all students, should adjoin each other, including their lunchroom and lounge. The location of meeting rooms near each other permits flexibility of use, easy transfer of furniture and equipment, proper supervision and maintenance resulting from concentration of people, and economy of time between meetings. Lounges may be spread throughout the building to serve various sections and may vary in kind with the sections they serve, so that a waiting lounge by the bowling alleys is decorated and furnished differently from the faculty or women's lounge.

Some of the quiet areas may well be served by separate entrances, included among which could be the chapel, guest quarters, faculty lounge, international center, and student activities and office spaces. Problems of control arise when this situation occurs and it may have some divisive effect on the union, but late operating hours in the newspaper office or guest wing may dictate separation of such areas from the whole building, as may the partial operation of the building during vacation periods.

Music listening (properly sound-proofed), library or browsing and art display rooms can be located together in a sort of cultural center. If this is done, the issuing of records, books and periodicals and prints from a central location and supervision of that area proves economical. These areas are likely to offer less attraction than the game areas, for example, while supplying experiences of value in broadening the horizons of undergraduates. Their location, however, in a fairly prominent spot may encourage more patronage, but since heavy traffic and accompanying noisiness may result, a choice may be necessary between prominence and peacefulness of position.

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[1] "Space Allocated Scientifically," Institutions Magazine, XXXIV, No. VI (June 1954), p. 33.

Organizational planning can offer much to the quiet areas. Determination of areas to be included might require the thinking of representatives from all branches of the university family. Men and women, students and faculty, commuters and residents, music, art and hotel management departments, student leaders and faculty advisors, foreign students, religious counsellors and athletic coaches are among those who might enter into this preliminary stage. When a tentative list of facilities is drawn up (usually tentative until final cost estimates are submitted) many of these same persons will continue to be of service. Student members and advisors of organizations can assist in drawing up the requirements for the activities areas and organizational offices (including such non-union sponsored areas as newspaper, yearbook, student government and radio station headquarters). The music listening room may profit from the advice of musicians, electrical engineers and hobbyists, and the art department may assist in the art room planning. The athletic, debating, music, extension and other organizations undoubtedly can extend help in describing their needs in housing visitors. Commuting students have some ideas concerning their need for facilities. Whatever office reserves rooms for meetings can supply information concerning the number now used.

Meeting Rooms

Expansibility -- A glance at the Classified Facilities Table shows a wide variety of uses to which meeting rooms and lounges may be put and the degree of interchangeability which exists between the functions of the two areas. If lounges are not to be used for formal programs but solely for spontaneous, informal use, the number of meeting rooms required is larger than that demanded when the use of lounges permits more flexibility. It seems quite certain, at any rate, that the meeting room facility will require expansion early.

> Provide for plenty of meeting rooms. Colleges always underestimate their needs for this facility; the rooms they do provide are usually unnecessarily large. (The most frequent demand for meeting rooms is for groups under twenty.)[1]

If, as seems likely, the meeting area will grow, the extension of systems such as clock, public address, air conditioning or ventilation should be considered in the original structure. While not ideal, meeting facilities can be increased by additions separated from the original meeting rooms, as such additions do not present some of the difficulties raised by unconnected food or game areas. Plans for the future might include meeting rooms near a ballroom, thus offering a part-time convention hall near meeting rooms for conferences, conventions and the like. The expansion of meeting facilities means the creation of more traffic to the area with the resultant need for adequate corridor, stairway and rest room space.

Flexibility -- The need for many small meeting rooms does not eliminate the demand for larger ones. Enough of each is expensive and the compromise of dividing large rooms into smaller ones by means of folding or sliding walls is a widely accepted one, even though it is a compromise with faults centering largely around the acoustic problem.

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[1] Butts et al., op. cit., p. 11.

The varying demands upon meeting rooms are reflected in the seating requirements. Unless each room contains seating equalling its capacity -- a rather costly procedure -- auxiliary seating in the form of folding chairs should be available to increase the capacity of these rooms as demanded. The chairs, centrally stored on dollies, may be moved easily to whatever point is necessary. Extra chair storage should be provided to permit removal of chairs from the meeting rooms if dance instruction, bridge tournament or similar activity demanding additional floor space might occur there. While the more expensive folding chairs are made to look like conventional chairs, they still may not be acceptable for appearance sake as permanent equipment. In this case some chairs may be used permanently in each room, with folding chairs augmenting them. If such chairs are stacking chairs, they add to the flexibility of a room, and storing them in a corner or closet eases the job of the floor cleaners. If folding chairs and dollies are to be used, the size of doorways and turning radii of the dollies should be considered to permit entry to the various rooms. If elevators are not included in the building, duplicate storage may be indicated to eliminate carrying chairs up and down stairs.

Some small meeting rooms, equipped with tables between six and seven feet long and seating up to eight persons, may double as conference rooms and the tables themselves serve as rostrums for meetings as well as conference tables.

Lighting, heating and ventilation must not be forgotten if rooms are to be divided by means of folding walls. Meeting rooms without fenestration, proper ventilation or with radiators isolated by folding walls do not induce the attention demanded by their function during hot or cold weather.

The addition of a small sixteen millimeter projection booth at the end of a meeting room simplifies the showing of motion pictures to small groups and eliminates much of the need for transporting and setting up equipment in a room where its noise, light and extension cords detract from the film showing. Such a booth, separated from the meeting room by a wall and glass port and properly wired, can serve many groups and relieve much of the load normally placed on a theatre, particularly if this booth looks into a larger room which may be subdivided. With the universal use of safety film, this booth makes little demands other than adequate ventilation.

Safety -- Meeting rooms frequently may be crowded. Draperies, upholstery and other materials should be fireproof, waste baskets kept as empty as possible and, if smoking is permitted, ash trays or stands provided. Access to and from them should be clear from both the convenience and safety aspects. Floors should be non-slip. Charts should be designed showing well defined aisles to prevent tripping and crowding, as well as to provide unobscured lines of sight. If fixed seating is used, a minimum of 32 inches from back to back of chairs is required for comfort and safety. Nineteen or 20 inches are needed for seat widths, and seats should be staggered so that those in one row are not directly behind those in front of it. This arrangement, with a sloping floor, will provide good sight lines.

Folding chairs should be selected with a view towards their safety. Naturally they should be sturdy, free from sharp corners and not prone to fold by themselves. A common danger with folding chairs appears during the folding and unfolding process when fingers are apt to be caught in the folding mechanism.

Windows in meeting rooms should permit proper ventilation without inflicting drafts on those using the rooms, and they should not be located behind the rostrum where the assemblage is forced to look into them. Notes may be taken in many of these rooms and so the lighting should cover all points with a minimum illumination level at desk height of thirty foot-candles.

Mention has been made of the conflict which exists between flexibility and soundproofing in the meeting room area. Acoustic ceilings assist in limiting the transfer of sound, as do wall drapes, cork flooring and acoustic walls. Since draperies, cork and acoustic surfaces present maintenance problems as well as added construction expense, careful planning in locating rostrums at opposite ends of folding walls, acoustic ceilings, and sensible room assignment permits a fairly satisfactory combination of flexibility and sound control.

Appearance -- While appearance remains a local problem,it seems safe to say that meeting rooms in union buildings serve their purposes better if they escape the classroom look. Window draperies, art prints on the walls, informal furniture, carpeting where feasible, permanent chairs augmented by folding chairs, ash stands, floor lamps and color schemes are some of the means which may be adopted to avoid an institutional appearance. Meeting lounges with upholstered furniture and carpeting may not be practical for large groups and steady wear, but do add much to the comfort and atmosphere of a union building.

Functionality -- The prime function of a meeting room is to seat people who are engaged in a common task, usually listening, watching or talking. These persons should be able to hear clearly whatever is said at the rostrum and, preferably, anywhere else in the room. If the room is large the latter may not be practical, and a public-address system be required at the rostrum. The alternating of seats in succeeding rows to prevent persons from sitting directly in front of those behind them helps in keeping sight lines clear. If films are to be shown, a retracting screen mounted on the wall so that its bottom is at least six feet from the floor when open makes watching motion pictures more effective.

Lounges

Kind -- As noted in the Classified Facilities Table, lounges lend themselves to a multiplicity of uses, not the least of which is ordinary lounging. The casual conversation between classes, the last minute perusal of a textbook, the keeping of an appointment or reading of a newspaper, are representative of the informal, unplanned activities which occur in the lounge area. Obviously, if lounges are used for a variety of planned events they often are unavailable for lounging. It may be that the attendance at such events may profit from the unintentional appearance of some seeking to use the lounge in its normal fashion, but recurring use of a lounge for a variety of events is apt to limit eventually its use for lounging. Since lounges are most popular as meeting places,it appears desirable to include more than one lounge in the union building, with at least one always available for spontaneous, off-hand use. The alternative to this -- inclusion of only one lounge -- is the establishment of a policy which eliminates the use of the lounge by specific groups for activities of limited appeal.

A variety of lounges -- men's, women's, faculty, commuters', mixed -- may be included in a union building. To a certain extent,the kind of institution involved determines the kinds of lounges which are desirable. A residential college does not need a commuters' lounge; a women's college probably finds a men's lounge superfluous, although it may wish to have a room available which can be converted to serve such a purpose on special occasions. The existence and location of a faculty club may determine the desirability of a faculty lounge,and the facilities and entertaining regulations in living units bear on the size and number of mixed lounges. The presence and availability of other lounges on campus should be considered in planning the union building lounges.

A division of opinion exists concerning the size of lounges. Points may be made for both large and small lounges, but careful consideration of the uses to which they are put and their relationship with other facilities must enter the planning picture. Thus, a building with a large ballroom may not need a large lounge as much as a building in the lounge of which it is planned to hold dances. If separate browsing or reading rooms, music rooms and plenty of meeting room spaces are provided, the number and size of lounges may be kept small.

Expansibility -- The expansion of lounge facilities is more easily accomplished than that of some other facilities. Lounges may be scattered throughout a building, and the conversion of meeting rooms or offices into lounges is more readily effected than many other transformations. Lounges offer less noise and traffic problems, hence may be located near most other areas except the noisiest ones, such as game rooms or kitchens. Expansion into new areas is rather easily achieved for much the same reasons of adaptability and flexibility. A limiting factor bearing upon expansion centers around the variety of uses to which a particular lounge is to be subjected, since a very busy lounge embracing a series of activities requires special attention to traffic, noise and coat checking. Hence, the projected growth of a lounge, addition of a new one or conversion of an existing area should recognize these special considerations.

Flexibility -- The flexibility of lounges indicates that they may be called upon to house large groups with a consequent need for proper ventilation and lighting. Built-in public-address systems with several microphone outlets in the larger rooms makes for flexibility. If growth of these areas is contemplated,easy addition to such services should be possible.

The variety of uses to which the lounges may be put should determine their make-up. Record concerts, reading or art exhibitions require little extra in the way of physical changes; bridge tournaments, lectures or coffee hours demand considerable moving of furniture; dances and carnivals necessitate removal of carpeting and some furniture,and rearrangement of the whole area. It is apparent that the amount and frequency of rearrangement anticipated has a direct bearing on the kind, durability and amount of furniture and equipment to be included, the decorative scheme, kind of flooring and location of storage space. Wall-to-wall carpeting and floor lighting would prove unwieldy in a lounge intended for dancing,but might prove desirable from a decorator's viewpoint in the lounge which is used mostly for reading, listening to music, exhibits or receptions. The ability to foresee the contingencies which a union building is called upon to meet is a limited one, and the more flexible a lounge is the more it meets most of the demands made upon it. In this respect some compromise between flexibility and fulfillment of prime function may be indicated.

The use of modern folding or sliding walls lends considerably to the flexibility of a lounge without detracting from the decor, although their acoustic properties do not make them effective sound barriers. One large lounge capable of accommodating a sizeable dance or assemblage might divide into several smaller lounges for women, men and faculty, with portions capable of being closed off during vacation periods to lessen the maintenance and supervision load.

Functionality -- If furniture and equipment is to be moved in or from lounges,it should be light enough to be easily handled,yet durable enough to stand occasional hard knocks. Three-seaters, often frowned upon because of their frequent use for napping, may be eliminated also for reasons of transportability. Lamps, with their shades and bowls, suffer from frequent moving and may be kept at a minimum in exchange for overhead lighting. Carpeting and padding in small sections may be rolled, moved and stored with a minimum labor force. Sectional furniture which may be moved about with ease to form conversation groups of varying size, rows of seating for lectures or instruction, or circles for discussion groups is available and practical, while meeting the requirements of functionality, appearance and economy. Door frames and chair rails should protect the walls from damage which is almost certain to result from much moving.

Surrounding students with art in an everyday situation can be achieved in the lounges. Unobtrusive picture moldings may be built into the walls to permit the hanging of art work which may be changed at will. Simple wooden slots, painted to match the decor, may be hung from these moldings and used for exhibitions. Several microphone outlets and speakers, tied into the master public-address system and strategically spaced, make it possible to use various portions of the room for speakers, orchestras, recitals, and similar programs. Additional illumination of these areas increases the room's flexibility.

Safety -- Smoking in lounges with upholstered furniture presents a safety problem which, through the use of such flame resistant materials as glass draperies, vinyl upholstery material and laminated plastic table tops, can be reduced. Numerous ash trays and ash stands with heavy bases, frequently emptied, help to prevent incipient fires as well as burned rugs and furniture. Large lounges should offer alternate exits with emergency lighting in case of power failure. The doors should open outward to expedite departure from the room. Highly waxed floors, often of wood, are most likely to be found in the decorative atmosphere of the lounge. Non-slip wax, properly applied, should be used here, and non-slip pads be used under all carpeting. Small occasional rugs are potential hazards and all carpeting must lie flat, lest the unwary trip over the edges. Distinct traffic patterns make movement throughout the room easy.

If overhead lighting is used to the exclusion of floor and table lighting, separate circuits should be included to provide auxiliary reading illumination, although the likelihood of students turning on this additional lighting when reading is not high. Where lamps are used, they require nearby electric outlets if wires are not to present a real danger. Floor outlets and wired tables have been used to eliminate this danger.

The windows should present no hazard to passersby or those in the room when open, as sometimes happens with casement windows. If they represent a source of ventilation, they should open at the top as well as the bottom, thus making draftless cold weather ventilation possible.

Appearance -- The lounges are quite likely to be among the more formal and highly decorated areas of the union building. They represent the campus living rooms, are often the spot where guests are received and where receptions are held. Whether formal or informal in nature, they should represent hospitality and invite relaxation. Youthfulness, warmth and beauty should be exuded. Such characteristics can be achieved by nearly any competent decorator, but combining all such characteristics with the qualities of durability and flexibility presents a real challenge. Fortunately, improvements in the fields of textiles, plastics, foam rubber and synthetics have enhanced the possibilities of combining the practical and esthetic qualities desired in the lounges. Fabric upholstery manufactured for public transportation uses offers much in the way of toughness and warmth, while plastic coverings which may be washed with soap and water provide colors, durability and texture in a field where only leather once was considered strong enough to withstand the usage of a public lounge. Skillful decorators can mix the colors and lines of furniture, draperies, carpeting and walls to obtain beautiful effects which present practical answers to the demanding problems offered. If folding chairs are intended to augment at times the seating capacity of the lounges, their color should be considered. Facilities for floral arrangements which can add so much to the lounge areas must not be forgotten.

Each lounge can reflect the character of its use. A leather lounge and panelled walls may be ideal for a men's lounge, while fabrics and colors may better answer the needs of the women. Geographic or historic themes might well be used. Sketches and models in color submitted to the building committee aid it tremendously in visualizing the appearance of the lounges, and the committee reaction as well as that of others for whom the lounges are intended assist the decorator in reaching the ultimate goal. Divergence of opinions and lack of understanding of colors, textures and form may make the decorator's handling of the lounge areas a task calling for tact and patience. If each lounge is to achieveits own unity and individuality, every aspect of the scheme must be acceptable to the decorator.

Lounge furniture is among the most used and misused equipment in the union. Each piece is quite likely to be subjected to more than its normal load as students double up while sitting on it. Arms become favorite rests during conversations or for over-the-shoulder reading. Feet often are rested on chair seats, cigarettes dropped and refreshments spilled. Absent-minded and deliberate vandalism, often dealt out by pencil points, is encountered, and chewing gum is not an unfamiliar cleaning problem. Some criteria for the selection of lounge furniture follow:

1. Frames of upholstered pieces should be repairable without disturbing the upholstery.

2. Arms on upholstered pieces should be strong enough to act as additional seating facilities or be eliminated entirely. If arms are included, they should be bare or so constructed to permit easy repair of burns.

3. Construction should be strong enough to withstand hard, continuous usage. If arms are eliminated, sufficient back strength should be incorporated into each piece to compensate for any structural deficiency incurred by the removal of the arms.

4. Wood finishes should be resistant to checking, scratching, denting, burns, perspiration, friction from clothing and discoloration.

5. Upholstery finishes should be long wearing and easily cleaned.

6. Chair backs should be designed to offer protection to walls.

7. Broad bases on legs eliminate permanent crushing of carpet nap.

8. Square carpets permit periodic rotation of wear points; rectangular ones offer more of this advantage than do irregular ones. Each offers savings in purchase and replacement.

9. Wood-grain laminated plastic tops for tables and desks offer nearly scratch-proof and cigarette-proof surfaces, while resembling their prototypes almost exactly.

Meeting all these requirements while conforming to the demands of esthetics is not simple, and some unions have resorted to custom-built furniture in an attempt to meet all the requirements. Since the design of furniture is an involved field, some caution might well be exercised here in favor of intensive investigation among the lines offered by the many reputable institutional furniture dealers in the United States.

To fulfill its function, the lounge must prove inviting to those for whom it is intended. It should be attractive and comfortable. Ash receptacles should be plentiful, and noise kept at a low level. If it is to be used for meetings and similar functions, storage space for folding chairs, platforms, music stands, refreshment tables and the like should be nearby.

Space for temporary storage of furniture and carpeting should be easily available if dancing is contemplated, although such space may be a meeting room not normally in use at such times. A similar room nearby, suitable as an auxiliary coat or check room, may be indicated. A service pantry connected to the kitchen, directly or by dumbwaiter, should be ready for use during receptions, coffee hours or similar programs.

Like other areas, lounges should be segregated by their functions. A faculty lounge should be near a faculty dining room, if one is planned. A ladies' lounge should be near or adjacent to a ladies' rest room, and a large lounge in which dancing or large assemblies are expected should not be located where its traffic interferes with other functions of the building. Small lounges near such a large one or near a ballroom do yeoman service on busy nights. Lounges generally belong with other quiet areas, although they may accompany dining spaces or theatres. Reference has already been made to the desirability of storage and service areas near multipurpose lounges. Chair dollies and hand trucks aid in removal and replacement of furniture and equipment. Areas intended as auxiliary storage places should have corridors and doorways wide enough to permit easy access.

If the lounges are living rooms, it is reasonable to expect the standards of decorum associated with living rooms will be observed. Feet on chairs, jackets and coats on furniture, and hats on male heads are occupational problems of union workers. If the union is to be an educative instrument, it should provide for the correction of lapses in etiquette as unobtrusively and tactfully as possible. Amorous couples often require a broad hint or more, and damaging "horseplay" at times demands a firm hand. Lounges with windows in their doors located not too distant from supervised areas such as browsing rooms, offices or information desks can be sufficiently supervised by periodic tours of inspection.

Reading Rooms

While all colleges have libraries, they seem to be considered primarily places for work, so that much can be done by a union browsing or reading room to stimulate good recreational reading habits on the campus. Avoidance of the "library stigma" may be achieved by using comfortable surroundings with air conditioning, fireplaces, decorative plants, proper lighting, by not numbering the binding of books and by meeting the reading needs through a selection committee. Certainly atmosphere is important if the browsing room is to be the sort of place where students and others go for intellectual stimulation or satisfaction, or to while away some time.

Expansibility -- If the browsing room is not to become a library with much dead or obscured storage, it should allow for expansion as it accommodates a growing collection. Such expansion can probably be accomplished more easily by leaving wall space available for additional book shelves and periodical racks. The usual library stacks of steel shelving do not offer the attractiveness desired of a browsing room environment, and wooden built-in cases to match the original installation should be planned for. Expansion into a larger area to meet the demands of more users (as opposed to a growing book collection) can be accomplished quite easily by extension into adjoining space, since the requirements of a browsing room are not as rigid as that of a billiards room or a soda fountain, for example. A reading room may assume nearly any shape and fulfill its function, providing wall space for storage and floor space for seating is available. If the browsing room is near a multipurpose lounge or similar quiet room, such as a music or art lounge, expansion may be met on at least a temporary basis by diverting overflow readers to such a spot.

Flexibility -- The Classified Facilities Table shows that the union library or browsing room requires little flexibility aside from the enlargement of seating capacity for such events as coffee hours, book auctions, book reviews or poetry readings. If art or photographic exhibits are to hang here, they require wall space and some molding or other hanging facilities. Folding chairs and tables should be all that is needed to make the area flexible, although location near a pantry or other serving unit makes coffee hours and similar activities embracing food service much easier to sponsor. The capacity of the browsing room for such occasions should be remembered when lighting and ventilation are being planned, as a few scattered lights and natural ventilation may meet the needs of the readers but not those of the coffee hour audiences.

Functionality -- The weight of books demands strong and stable storage. The task of reading requires at least thirty foot-candles of illumination in a room in which the brightness-balance is adequately maintained. While auxiliary lighting from floor lamps or ceiling spots may be used at reading stations, the whole room should be well lighted and the furnishings possess light reflection factors between 25 and 75 per cent. The reading room stereotype of dark furnishings, leather chairs and dim corners illumined by cones of glaring light is neither practical nor fitting for the union's purposes. Acoustic treatment of the reading room is desirable to keep the noise level low, and carpeting on the floor, contributing both to the attractiveness and quietness of the area, should be well anchored to prevent accidents. If floor lamps are used, numerous electric outlets are needed to eliminate long, trailing cords. Floor plugs might well be incorporated in the floor itself.

Appearance -- The appearance of the reading room, already mentioned in connection with the safety aspects, should be inviting. The use of color and light is important because of its decorative value as well as its effect on the primary function of the room, reading. The elimination of an institutional appearance is important if reading habits separate from the academic are to be encouraged. Periodicals should be bound in sturdy, attractive binders. Newspapers, always troublesome storage and issuing items, probably should be kept on library racks built for the purpose, even though such racks do tend to present an institutional appearance. Comfortable, upholstered chairs, perhaps with footstools, are a near requirement. If writing or studying is to be permitted or encouraged, the tables or desks and chairs to be used should be in keeping with the decor.

Many of the elements required to make the browsing room more functional— lighting, appearance, sound control, furnishings— have been mentioned earlier. They have emphasized the desirability of the room being conducive to reading. Its location away from noise, either inside or outside of the building, enhances its function. The ease with which books or periodicals may be located without recourse to catalogues or attendants may encourage browsing. Alphabetical arrangement by classifications may help. Nevertheless, service should be available for those who need assistance in selecting or locating reading materials, in withdrawing and returning books, and in maintaining the quiet and order so much a part of the atmosphere.

Efficiency and Economy -- Previous mention has been made concerning the possibility of combining music listening, art display and reading rooms into a sort of cultural center with the supervision and equipment issuing for all handled from one control point. The savings possible in terms of wages and protection of furniture, books, art work, records and equipment, in addition to the service and educational opportunity and potential increase in operating hours, recommend serious consideration of such a combination by all but the largest unions. A central office, looking into the reading room on one side and listening lounges on the other and across from an art display or music practice room, and large enough to store records, sheet music and framed works of art for circulation is an efficient tool for strengthening an important and much needed portion of the union program, particularly when it is well staffed. Entrance to and egress from the browsing room via this central office can provide the supervision necessary to prevent much of the pilferage which so often exists, and can permit circulation of volumes, records, art work and sheet music when desired. Cataloguing, record keeping, changing periodicals, answering requests, advising on reading, maintaining decorum, are among the many necessary functions which can be accomplished here, while the expense of such an operation can be written off against several non-revenue-producing areas.

The normal functions most likely to be carried out in the browsing room are book, periodical and newspaper storage, reading and book selection. Books are usually shelved around the periphery of the room, and this area should be separated from furnishings and equipment by an aisle wide enough to permit persons to select their books easily. Periodicals and newspapers require less browsing room and may be incorporated in a lounge arrangement of furniture by use of standard racks, or by storage on coffee or other tables. If hometown newspapers swell the list of newspapers kept in the browsing room, it may be desirable to issue these from the control desk and merely post a copy of the list in the room itself. Should this be contemplated, arrangements for storage of such papers should be included in the original planning. All issuing probably requires some sort of security by way of an identification or union membership card or bursar's receipt, and handy filing racks should be designed in advance to permit efficient interchange of such cards.

Organizational Planning -- There are a number of persons on a university campus who can offer assistance in planning the browsing room. Certainly members of the library usually have suggestions for the planning committee, as may faculty from the English department and members of the local book review or similar groups. The selection of reading matter to be included in the original collection as well as in additions might well be made by a standing committee which continues to function after the building has opened.

Music Rooms

Marked changes have occurred in the field of music listening during the past decade. Record changers, the long playing record, tape recorders, and high fidelity have increased tremendously the interest in reproduced music and have offered unions, among others, a real opportunity for improving the level of musical understanding and interest of their students. At the same time, problems of control and usage have been raised since record and tape playing equipment is costly and complex, records easily damaged and the noise potential great enough to transform the so-called quiet areas of the union building into pandemonium. The whole music listening program must be thought out well in advance because this aspect of the union building is dependent to a very great extent upon the manner in which the program functions. Individuals listening to music may do so in booths, small rooms or lounges of varying sizes. They may be using earphones which can disturb no one (and which are uncomfortable for any length of time, unfaithful sound producers and not apt to entice new listeners), commercial combination phonograph-radios, or custom-built high fidelity sets. They may be playing the records themselves or may have requested selections which an attendant is playing from the control point. Records and tapes may be kept with the player and used by anyone, they may be issued by an attendant or they may be private property. Persons using record players may be required to pass a test in the operation of the equipment. Planned group listening such as record coffee hours may be held in a multipurpose lounge equipped with a player or a speaker from a master system, or they may take place in a music lounge specifically designed for music listening, recorded and live. Economy may demand that listening booths be connected with the reading room where group concerts are held. Obviously, many of these items must be considered before the building is planned, because such items as conduits, storage racks, acoustics, equipment, furniture, electrical outlets, glazed doors for supervision, and cataloguing methods determine much of the utility of the music room.

One solution to the union's music problem seems to lie in planning a music lounge with a grand piano or two, comfortable furniture, and record playing equipment. This room, large enough to seat those expected to attend student recitals or record concerts, can be used for live performances as well as planned recording sessions,and also for practice or recreation playing and informal record listening. Booths, containing a comfortable chair or two and record playing equipment, may be near this room and the control center. Such an arrangement exists in the Illini Union at the University of Illinois.

Advance wiring and sufficient space makes the increase in the number of booths a simple project. Adding to the space of the music lounge requires acoustic treatment of the additional area being embraced. The lounge itself can be expanded into new space rather simply, providing corners and sight lines are not involved.

Flexibility -- The use of folding or sliding walls to achieve flexibility of the music area is not practical because of the transmission of sound through such walls. The music lounge itself can double as an art display room and be used for other, non-musical events. With booths for individuals, smaller unions may find it necessary to combine the browsing, art and music rooms, a combination not to be desired but certainly better than the omission of one of these facilities. If changes in locations of speakers or if, in this day of bi-aural sound, the use of more than one speaker at a time seems desirable, or if radios, particularly frequency modulation tuners with aerials, are to be used, multiple phono plugs may be installed as desired, provided that proper conduits are incorporated in the original plan. The alternate to this -- running wires on the surfaces of floors or walls -- proves unsightly, dust-catching and dangerous. If the music room is to be used for meeting or lounge purposes with no supervision available -- as during vacations, for example-- by conferences or conventions, it is advisable to consider the desirability of locking record storage, pianos and other equipment.

Record playing booths can serve little other than their prime function. They should be accessible from a corridor or control lobby rather than from the music room itself, as a recital or other function in the music room may be disturbed by listeners leaving or entering the booths. Such an arrangement may also discourage users who do not wish to intrude on a program by passing through. In other words, the music area should be flexible enough for individuals to listen to their records ,while accommodating a group engaged in a program or in informal listening. Larger unions may be able to include smaller practice rooms with pianos and benches for the use of those who wish to play while the music room is busy.

Safety -- The usual rules of safety, such as non-slip floors, should apply to the music rooms. In addition ,it should be remembered that much of the equipment used is electric in nature,and that all wiring should be done carefully and be protected by conduits wherever possible, including aerial connections for radio. Light in the music room is not as critical as in the reading room but program notes, sheet music, librettos or scores may be read here,and so attention should be paid to maintaining a level of intensity and brightness-balance somewhat near that of the reading room. Auxiliary lighting at the piano benches, in the record booths and record catalogues, and in storage spaces may appear desirable. At least provisions for such light augmentation should be made by installing plenty of electric outlets, including some in the floor if music stands may be needed.

The emphasis on high fidelity sound reproduction has resulted in tremendous increases in the number of decibels which seem necessary for good listening. Listeners intent on hearing each triangle or woodwind are prone to turn the volume controls up to the point of deafening. Proper sound-proofing of booths and rooms can do much to prevent this from interfering with the rest of the building, although some supervisory control is probably necessary from time to time. Open windows and doors, entrances from the control area, and ventilating ducts, are some of the points where sound can leak into or out of the music area. Door closers, a mechanical, closed ventilation system or air conditioning, carpeting, cork flooring, acoustic tile or plaster, fixed, double-glazed windows and non-parallel walls are some of the items an architect considers in planning the music area.

Appearance -- The appearance of the music room, like the other lounge areas, should be comfortable and inviting, and should indicate the function of the area. Record players and pianos are available to fit nearly any decor. Musical encyclopedia, books, periodicals of criticism or on music reproduction, add to the atmosphere as well as the utility of the room. Art work with musical motifs is available. Furniture, color, draperies, art work and carpeting can render the often drab listening booths and practice rooms attractive.

Functionality -- Because the union should be a medium for individual and group self-discovery and expression through a broad program of social and cultural recreation, the music room offers much that can make the union such a medium. However, the functioning of the music room is dependent in great part upon the original planning. Listening to or playing music should be done easily, which means that withdrawing a record from the library or using the piano should not be an elaborate process, nor the requesting of a record to be played involve a long wait. Whether complete freedom to use records and other equipment is the policy or whether requests are piped into booths or to other spots, or whether a combination of the two is adopted, the physical arrangements must be such that the music is quickly and readily available. A three-way portable record player or a tiny upright piano does not fulfill the task of the music room. The reproduction of recorded music is such a dynamic field today that careful investigation into the latest developments should be made to assure the finest sound quality. Such items as diamond stylii, turntables (as opposed to changers), speakers with tweeters and woofers, are constantly being improved, and equipment continually kept up-to-date tends to attract at least the enthusiasts in the field.

The creation of a record and music library catholic enough to meet the requirements of as varied a clientele as that of a college campus presents a challenge to any committee. A basic list of classics may be drawn up in the various fields -- orchestral, jazz, vocal, musical comedy, for example -- and be added to as the program operates. Several excellent publications exist which may serve as a guide to the selection committee. Additions to both the classics and more transitory popular numbers may be made as experience suggests. Obviously, much of the functionality of the music room is determined by its collection of scores, librettos, sheet music, records and tapes.

Exposing students to new experiences is part of education, and bringing college students into contact with such cultural portions of the union as the music room and art exhibits is a desirable project not easily completed. There may be some danger that in holding all music programs in the music room, this room will become little more than a gathering place of the relatively few who are already convinced of the importance of music in their lives. The presentation of both live and recorded music programs in lounges and other parts of the building may help to bring new students into the music room. If this is intended, then pianos, amplifiers, record players and other equipment should be considered during the planning stage. As in the case of the reading room, efficient means of food catering to the areas should be incorporated in the building plans if coffee hours and the like are anticipated.

Efficiency and Economy -- The efficiency and economy which can be effected by a single service and supervision center has been mentioned. The largest union buildings may require full-time staffing of the separate areas, and any union which can afford specialists in each of the music, art and reading fields is certainly in a position to add much to its educational contributions. Nearly all unions welcome the relief given their payrolls when one person can perform several functions simultaneously. Even if separate control points are included in the planning, a workable alternate involving the possibility of supervising more than one area is appreciated by the union director on slow week ends or during sieges of staff illnesses. A single control area should be carefully planned, particularly if it is a storage issue point, and should be large enough to permit the expansion of staff should the busiest times or special programs demand it.

The importance of sound-proofing has been covered in connection with safety,but reemphasis in connection with efficiency may not be amiss. Sound leaks from one area to another can easily lower the efficiency of the music area, since Beethoven's Ninth filtering from a listening booth into Schubert's Trout Quintet as rendered by the campus chamber music society is not likely to be well received. Acoustics in the music room should receive particular attention, since such items as bare walls, glass windows, draperies and acoustic tile may affect the quality of sound, particularly live sound, that originates therein.

Economy of space is likely to dictate the allocation of a minimum of room for listening booths, but this is apt to be false economy if it results in just enough room for the record playing equipment and a straight back chair. Sufficient area for two comfortable chairs may result in actual economy if it permits a couple who might normally be using the whole of the music room to transfer their listening to a booth, thus freeing the music room for a larger group. Chaperonage policies undoubtedly demand glazing in these booths to permit easy supervision.

If the music room is to be transformed from a lounge into a concert or recital room, auxiliary seating is required, thus indicating nearby storage space for folding chairs, such space probably being the same which serves the art and browsing rooms. If the pianos are to be moved, dollies are required, and door openings and freight elevators large enough to permit their passage needed.

Organizational Planning -- The selection of equipment for the music room is apt to be a problem because of the tremendous range of price and quality. The best in record playing equipment and in grand pianos may seem prohibitive,but there is no gainsaying their advantages in quality. Persons well versed in high fidelity, so called, can draw up specifications for excellent installations at reasonable prices. Whether rebuilt and refinished pianos should be considered,depends upon the overall budget and the availability of expert advice.

The music and electrical engineering departments, campus and local radio stations, varied hobbyists, libraries, choral, orchestral and band groups are some of the places where resource persons may be obtained in planning for the music room. The planning committee can use expert advice in equipping the area and starting its library,and may discover gifts in equipment and records easier to obtain here than in some other areas.

Art Display Rooms

Art, like music, involves both active production and passive viewing (or listening). The Classified Facilities Table shows that the actual creation of art is not a function of the art room but rather of the hobby area. The art room's prime function is fostering of appreciation,and although lectures and similar programs may be offered there,it is an area for exhibit most of the time.

Expansibility -- Expansion of the art room may be achieved not only by enlarging the room but also by increasing its facilities for exhibition. Portable display boards and shelves may be constructed for large displays and moved into the art room when needed.

In planning for such expansion, provisions for additional lighting (probably ceiling spotlights), for furniture rearrangement (to permit easy traffic flow), and for possible additional floor bracing (for the portable display pieces) should be made. Expansion of display area may also be obtained by utilizing corridor, lounge and meeting room spaces and, if this is intended, provisions in the form of wall moldings and display cases should be made prior to the blueprint stage. Exhibits in such areas, like concerts held outside the music room, tend to increase the number of persons brought into contact with art. Extension into larger quarters is a relatively simple matter for the art room, but is simplified further if the space earmarked for such extension originally contains the wiring which will be needed to augment the lighting.

Flexibility -- Multiple use of the art room appears nearly mandatory for most unions, since the relatively small number of participant hours which are expended therein in the pursuit of art render its inclusion as a single-purpose facility almost indefensible on most campuses. A lounge room, comfortably furnished, with plenty of hanging space on its wall, and with tables for sculpture and similar display (at least one union uses glass covered tables to safeguard its arts and crafts displays), which can be converted into a lecture or meeting room by the moving of furniture and the addition of chairs and which, with the addition of a piano, record playing equipment or projector, can be used for concerts or films and slides, is likely to provide the flexibility desired in a union building.

Safety -- If portable display equipment is to be used, its design should be such that repeated use does not lower its safety factor. Framed art work, sculpture and other objets d'art are apt to be heavy, and weak supports endanger not only those hanging or viewing displays but also the displays, often valuable, themselves. If floor plates are used to reinforce this equipment, carpeting must necessarily be cut accordingly and should be laid to prevent tripping over it by those circulating through the exhibits. In arranging displays consideration should be given to traffic patterns to prevent tripping over furniture, projections from the exhibit cases and the like.

Appearance -- With esthetics the basic appeal of the art room, it seems only natural to demand that the room be esthetically pleasing as well as functional. The "museum" look is not apt to entice students or others into it, to enhance the appearance of the exhibits themselves, to inspire gallery committees nor to heighten the appeal of the room for other purposes. Furnishings, colors and textures may be used which are of themselves attractive without detracting from the exhibits. Pegboard or cork walls may be painted, or the latter covered with colored burlap or monks cloth, and the various display units used in the the room may assume forms that are pleasing and utilitarian.

Functionality -- All walls in the room should facilitate easy display. Pegboard walls allow the addition of small shelves whenever and wherever desired, and properly designed auxiliary boards and shelves may be brought into the room to accommodate larger showings. Nearby storage of such portable equipment should be available and should be large enough for temporary storage of some furniture from the art room if traffic circulation during large exhibits demands its removal. Swivel spotlights in the ceiling to augment the normal illumination of the room provide the flexibility of lighting needed in such a multipurpose area. These spotlights must be arranged so they reach any supplementary display facilities intended.

To function properly, the art room must display its wares well, be enjoyable to use and easy to arrange. Quite properly, student committees do most of the exhibit planning, exhibiting, packing and catalog writing. Walls, at least above wainscoting height, are easiest and most flexible to utilize if their whole surfaces lend themselves to use. Pegboard walls or continuous panels literally can be covered with art work or shelving merely by the use of various shaped hooks and brackets which are easily inserted into the holes.

If cork walls are used (and they have the added advantage of sound absorption),the cork must be thick, tough and closely grained to hold tacks, pins and brads which may be carrying weights of thirty pounds or more. Plain, painted cloth-covered cork offers a pleasant texture and proves to be a satisfactory background for art work.

Taking works of art beyond the art room itself is largely a matter of providing hanging mouldings in other rooms. Union buildings without art rooms or with inadequate exhibit space may find that a series of wooden strips about one inch by three inches, cut to the proper lengths and painted to match the wall colors, and equipped with wire and moulding hooks, may be hung in lounges, meeting spaces and other areas to provide additional show room in emergencies such as a large photographic exhibit or poster show. Display cases in corridors and lobbies should be large enough to contain at least two average sized framed oil paintings and be deep enough to hold reasonable sized pieces of sculpture, ceramics or artifacts. They should be well lighted by fluorescent tubes (incandescent bulbs generate heat inside the cases) which are shielded from the viewer's eyes. Their fronts should be glazed and unobscured,and adjustable glass shelving available for use in them. The backs, of pegboard or cork, should probably be hinged to permit the undisturbed arrangement of cases from the rear, thus eliminating the traffic conflict and danger from the fronts of the open cases which occurs when exhibits are mounted from the front. If cork is used for mounting,it should meet the same requirements demanded of the art room wall. The display cases should lock to safeguard the exhibits and be master-keyed to permit one key to open them all.

While a greater appreciation of art is a function of the art room and one which should be served in every way possible -- periodicals and books on art, print collections, lectures, illustrated talks -- it is quite possible to interest students in doing their own work by displaying as much student art, craft, photography and similar work as is warranted in the art room and its adjuncts.

The art room needs storage space for its portable equipment, auxiliary seating, its own collection (in a dry, cool spot), its circulating collection, for arriving and departing exhibits,and for uncrating and crating. Much of this storage requires specially built shelving to permit the safe, upright storage of art pieces and a quick locating system. A frame shop with a few simple tools may be desirable here,although the hobby or maintenance area may handle such needs.

If a circulating library of prints or originals is to be one of the union's services, provisions for storing, receiving, issuing and cataloguing them are necessary. Should the contents of this library prove to be large and unwieldly small reproductions or transparencies for quick reference by prospective borrowers may save many exploratory removals from the storage racks by permitting easy selection at the counter before the final, larger piece is brought out. Here again the case for a single control area for the so-called cultural section deserves emphasis.

Organizational Planning -- Faculty members from such academic fields as art and photography are natural resource persons to help plan the art room and its library. Librarians, painting enthusiasts and otherhobbyists, professional artists and gallery directors are among many of the other local persons who may be of assistance.

Commuters' Areas

Nonresident students at colleges near or in metropolitan centers afford many problems to unions, a number of which center around their non-participation in most of the union's programs. Their demands on the college naturally differ from those of the residents. They need parking space on the campus, a place to eat a bag or light lunch, storage place for books, lunches and similar equipment, a spot for resting or, perhaps, an occasional overnight stay. While the union is not necessarily the only location on the campus where such services may be rendered,it seems to be the logical place for many of them. Furthermore, many of the day students are quite likely to eat in the union and to use it as their headquarters, and so it seems logical to plan to meet as many of their demands as possible in advance. If the union building is to be a unifying factor on the campus, it must be prepared to serve this ofttimes large segment of the student body.

The storage of bag lunches, books and wearing apparel for day students probably can be solved most easily by full-length lockers in the union (or elsewhere) which can be assigned to all who need them. However, lockers in great number require an excessive amount of space and present difficult administrative problems. It is primarily the bag lunch which seems to present the most trouble, since the commuting student is usually reluctant to carry it through the morning hours. Lunches also possess the unfortunate tendency towards malodorous disintegration when forgotten, which somewhat complicates their handling. As outer clothing is usually worn between classes when needed,or can be left in automobiles or checked when not needed, full size lockers may not always be required.

Small lockers, large enough for textbooks, binders and bag lunches, located near a commuters' lunchroom, if one exists, or other food service area, may fill the need. They should be in a well-ventilated and cooled (50°F) room and master-keyed for periodic cleaning. If gymnasium uniforms are carried to and from home,then the lockers should be larger and individually ventilated. The issuing of key or combination padlocks appears to be the best solution to prevent duplication of keys for specific lockers.

Reclining rooms for both men and women commuters may be desired. Here these students may rest between classes or appointments or during minor physical disturbances, such as headaches or passing nausea. Such rooms should be in a quiet area near or adjacent to other commuters' facilities such as lunchrooms or lounges, and should be closed off from any public areas. Furnishings in these reclining rooms need be little more than rudimentary to suffice; comfortable cots and mattresses, simple linen and a single blanket for each cot, pillows, and a few chairs and a closet for hanging coats. Subdued colors and lighting, even temperatures, adjacent toilets (perhaps with showers and lockers) complete the requirements of most such areas, since further refinements are apt to duplicate the functions of the infirmaries or guest rooms. Naturally, each institution must determine the degree of elaborateness and availability it wishes its reclining rooms to reach. It may be that a room or two, normally locked, and used only upon request provides much of the control and service desired by one college, while large dormitory-like spaces best meet the needs of another.

Guest Rooms

Many union buildings contain overnight guest facilities, the extent of which ranges from a single room or suite through large, barracks-like halls to elaborate hotels with full commercial service. The facilities may be intended primarily for university guests, such as convocation speakers, for visiting groups such as athletic teams, for parents or returning alumni, for the guests of students or for conventions. They add to the service aspects of the union building and offer little to its educational program aside from the training the larger units afford to student employees and to students who are majoring in hotel administration. In this latter connection it might well be noted that such union buildings as those at Cornell University and Michigan State University, which at one time served as laboratories for hotel administration curricula, have relinquished such functions to actual hotel-like structures such as Statler Hall at Ithaca and the Kellogg Continuing Education Center at East Lansing. The inclusion of guest rooms in the union building depends upon many diverse elements, such as present and future needs, facilities existing elsewhere, nearby hotels, curricular development, operating hours, operating costs and other union facilities, and careful study by a well-rounded subcommittee is indicated. The fact that the Association of College Unions lists hotel units among the doubtful facilities to be included in union buildings should serve to reinforce the need for careful study.

It is beyond the scope of this study to consider the planning of a hotel wing, as such work belongs to the specialized field of hotel designers. Nevertheless, regardless of the specialization necessary, the hotel planning must be integrated with the rest of the union building planning to permit the efficient functioning of the whole. Common use of food service, meeting rooms, theatres, ballrooms, game facilities and lounges may be desirable or necessary, at least during certain portions of the year, yet complete separation of the two areas may be required at other times. Integration of administration requires easy communication and supervision.

If guest rooms for occasional visitors or dormitories for visiting athletic teams and other groups are desired, their place in the overall union program must be considered. Laundering of linens, making of beds, registering guests, accommodating late arrivals and early departures, are among many of the items not normally covered by routine union functioning, and may result in costly operations or unsatisfactory service when added to the many other union duties.

Expansibility -- Expansion of the number of guest rooms is quite likely to mean the extension of a plumbing system, and preliminary planning should consider this. Expansion may be accomplished by conversion of other areas into guest rooms, but should keep the guest area as segregated from other areas as is possible to assure privacy. Hence, planning for such an eventuality should anticipate changes in corridors, stairways and entrances to ensure comparative isolation for these rooms.

Flexibility -- Guest rooms are nearly inflexible as far as multiplicity of purpose is concerned. The number of guests which can be accommodated may vary somewhat as needed and proper planning of connecting doors can permit the combining of rooms into suites, part of which may lend themselves suitably for convention conferences or the display of merchandise. Basically, however, it seems wise to plan to use the guest rooms for their primary purpose.

Safety -- The possibility of fire occurring largely from the perennial safety problem of smoking in bed must be met in connection with the guest rooms. Separated from the rest of the building with little or no traffic through the area during much of the time, the rooms might easily hide undiscovered conflagrations until they have assumed major proportions. Fire detection and sprinkler systems should be included in these rooms and alternate means of egress provided. All furnishings, such as draperies, chairs and carpeting, should be fire resistant.

Appearance -- The guest rooms should be inviting, restful and simple. There appears to be no need for elaborate arrangements on a par with luxury hotels, and the accent should be on comfort and cleanliness. Carrying the union motif into the guest rooms by such practices as hanging good art work on the walls, using bedspreads with the university seal, supplying collegiate letterheads, matches and ashtrays, are among the devices which can be used to enhance the attractiveness of the rooms.

Functionality -- The main purpose of the guest rooms does much to determine their functionality. If single guests are anticipated, smaller rooms with one single bed in each may fill the requirements. Such an arrangement is quite inflexible, however, and at least some of the rooms probably should be large enough for twin beds to accommodate husbands and wives, business partners and the like, as such rooms can still be used for single occupancy. If alumni are expected to use the rooms, some might be large enough to permit the introduction of cots for children. Chests of drawers, closets, desks, chairs, and similar furnishings are available from a variety of hotel and motel suppliers. Top quality institutional equipment should serve nicely in this part of the union and should be chosen with an eye to ease of cleaning and maintenance by a staff not necessarily as adept at such work as that of a hotel.

As long as the function of the guest rooms remains at servicing the campus by housing overnight occasional guests (as opposed to handling conventions, alumni week-end crowds or resident faculty members, for example),they can meet the demands placed upon them in fairly efficient fashion. A number of details -- twenty-four-hour operation, carrying of bags, changing linen, making reservations, collection of charges, valet services, parking cars -- may provide rather permanent irritations,but planning can assist in reducing these irritations. Both inside and outside entrances to the guest area should be provided in most instances, with guests who expect to arrive late being given keys to the outside entrance (or all room keys made to fit this lock). These entrances should be equipped with riot locks and automatic door closers to offer as much segregation of the area as possible. The inside entrance, keyed alike with the outside one, should be fairly close to the registration point. Elevators should be installed if stair climbing is involved, particularly if guests are apt to be carrying their own bags. The outside entrance to the guest room should be near a parking area to permit easy unloading and loading of baggage. Registration of guests can be carried on at one of the administrative offices or at the information center, with the latter the most likely spot because of its long span of operating hours. Room for keys, files and other records must be provided here, and access to a safe for the safe-keeping of valuables overnight is advisable. Larger guest room units require a separate registration desk.

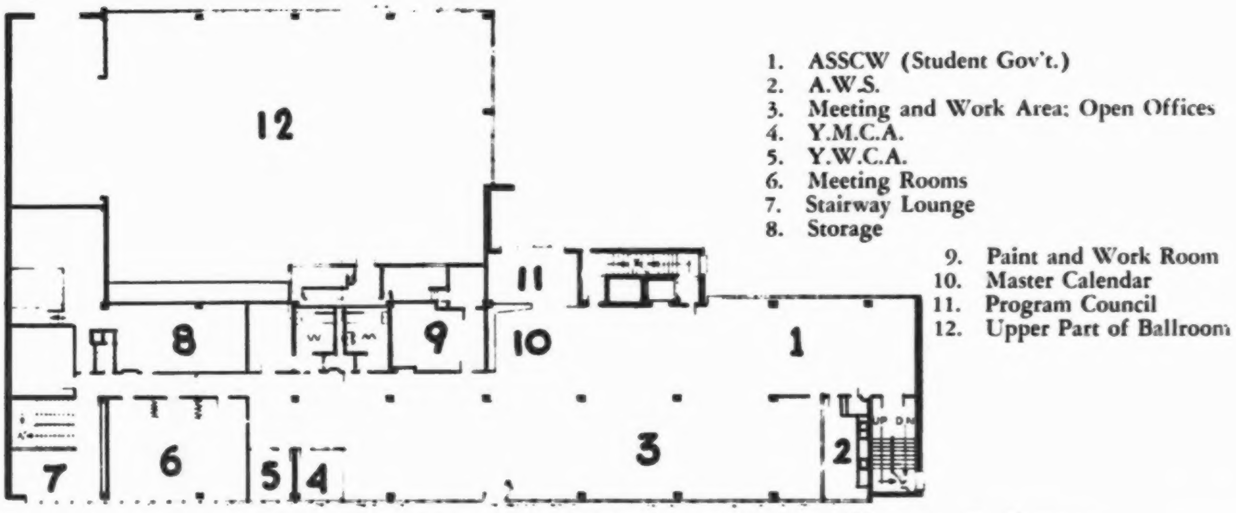
Dormitory-like facilities with rows of lockers and beds or cots and central toilet and shower facilities meant to be used by visiting teams, glee clubs and similar groups require less administrative and maintenance care. These facilities can usually be located less conveniently than guest rooms, since the college youths they accommodate are quite capable of carrying their own bags, are on a regulated schedule, register as a group and often have their own supervision and spokesman. A committee investigating the question of guest rooms should include representatives of the athletic, music, drama, debate, and hotel administration departments, the deans of men's and women's offices, housing office, business office, maintenance department, and alumni office among others.

Student Activities Area

A student activities area is a space housing a number of desks and filing cabinets which can be used by varying student organizations for a portion of the academic year. Thus groups which do not need an office or room of their own can be accommodated with a minimum of space allocation. The number of groups and activities on each campus that might use such an area determine its size,and it appears wise to consider that the existence of such an area might well increase requests for its use, thus making a somewhat oversized original plan advisable.

The activities area should be integrated with the student offices to permit ease of supervision, communication and maintenance. Such non-union offices as the yearbook, newspaper, service, student government, radio station and radio club, if included in the building, would fall naturally into this grouping,and the union board and committee headquarters might well be located here, although their proximity to staff offices has much merit. The activities area, located near the meeting rooms, can well serve as the headquarters for many of the campus organizations. A bank of filing cabinets can serve as a repository for minutes of meetings, records and treasurers' reports,and each cabinet may be locked if this seems desirable. Typewriters should be available for the typing of min-

PLATE 11—Two Approaches to An Activities Area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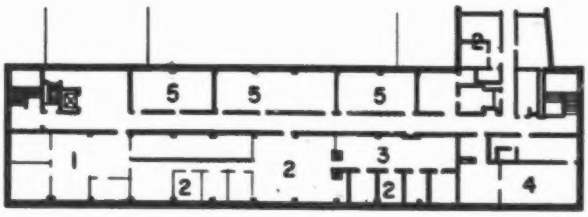
UP DN
1. ASSCW (Student Gov't.)
2. A.W.S.
3. Meeting and Work Area: Open Offices
4. Y.M.C.A.
5. Y.W.C.A.
6. Meeting Rooms
7. Stairway Lounge
8. Storage
9. Paint and Work Room
10. Master Calendar
11. Program Council
12. Upper Part of Ballroom

Fig. 1--Wilson Compton Union, Washington State College, Pullman, Washington.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HUB Offices (1) The headquarters for the Hetzel Union personnel and Associated Student Activities.

Student Activities Offices (2) Headquarters for the following student activities.

All-University Cabinet
Alpha Phi Omega
Androcles
Association of Independent Men
Blue Key
Chimes
Campus Chest
Class Officers
Druids
Graduate Students Association
Interfraternity Council
Leonides
Mortar Board
Panhellenic
Parmi Nous
Philotes
Scrolls
Skull and Bones
Spring Week
Tribunal
Traffic Court
W. S. G. A.

File Room (3) Equipped with 40 combination filing and storage cabinets for use by student organizations.

President's Room (4) This small dining room with a lobby and reception area is used by the President when receiving official guests of the University.

Meeting Rooms (5) There are eight meeting rooms, each having a capacity of 22. One of these rooms can be enlarged to a capacity of 66 by use of folding doors while two others can seat 44 each by the same method.

Fig. 2--Hetzel Union, Pennsylvania State University, University Park, Pennsylvania.

utes and reports, and a spirit or stencil duplicator and a small post card duplicator should be accessible to qualified users. Telephone directories and campus and community telephone service, perhaps on a coin basis, should be provided. In addition to desks and chairs, the area should contain work tables for the duplicating equipment and for layout, envelope stuffing and similar work, and typewriter tables and desks. Conference type desks and side chairs assist in holding executive meetings in the area. If no other room is available for poster-making, a section may be set aside for a work table and for materials storage, although poster-making is apt to prove a rather noisy and untidy operation to include in an office. Some storage cabinets might prove desirable in the activities area, as might coat hanging facilities if check or cloak rooms are not nearby.

In the activities area, extra space for filing and storage cabinets and an extra desk or two permit considerable expansion of its services because of the flexibility permitted by the temporary nature of the assignments. The growth and change of the campus is likely to find organizations assigned for part of the year to the activities area eventually demanding full-time office space, with new groups moving into the activities area, hence planning for expansion of the latter space should go hand in hand with that made for office spaces.

The use of modular furniture and movable partitions permits much flexibility in offices. The activities area and the student offices can all be included in one large room which has portable partitions and adjustable tops, pedestals, and drawers in the desks and work tables, and which affords almost constant change. Such a large room, without the use of modular furniture and partitions, has proved satisfactory at Washington State College. The lack of privacy and quiet may present some objections to wholesale adoption of the plan, but its use in the activities area has much to recommend it.

Overall ceiling lighting delivering fifty foot-candles of illumination to the desk tops permits the moving of equipment wherever desired, and electric outlets generously distributed around the walls, with a few in the floor, provide for electric typewriters, duplicating machines, light boxes or other electric equipment.

Principles of safety, appearance, efficiency and economy applying to administrative offices in general can be applied to the student activities area. Some thought should be given to the policy of closing hours of the union building, since emergency and special meetings, deadlines and all-night broadcasts may, in the students' minds, require that these offices be kept open after the closing hour. If such is permitted, a means of segregating this area by separate entrances and by closing off corridors may be advisable to maintain reasonable security during the night hours.

Among those who should be consulted on the planning of the activities area are the director of student activities, the faculty advisors and presidents of some of the groups likely to use the area, and whatever experts may exist on the campus in such fields as office management.

Non-Union Student Facilities

Offices -- The non-union offices can be planned much like the administrative offices. They need not be large enough for meetings of the entire membership or staff of each organization, but if located near the meeting rooms they permit somewhat easier coordination of operations. Thus, while a meeting of the student government group must be held in one of the larger rooms, its executive and other committees may convene in a fairly small office where its records are kept, correspondence handled and the remaining business transacted. Certain offices require special equipment but, except for radio paraphernalia, this fits easily into the usual office spaces. For example, layout and typing tables, copy

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desks, teletype machines, book cases, cut cabinets, file cabinets for old newspapers, addressing equipment and similar items needed for the newspaper office require little more than space, light and electric outlets to operate. The yearbook requires no special arrangements other than a light box. Because both organizations make considerable use of photographs, it is advisable that darkrooms, preferably adjacent to each other, be available. Whether a common darkroom serving both offices is practical is a local problem which should be considered in light of the ownership of chemicals, film, and other supplies, and possibly scheduling conflicts.

Campus Radio Station -- Campus radio stations, by Federal Communication Commission regulations, may not transmit so as to interfere with normal broadcasting unless licensed and so, to all practical purposes, are limited to radiation by means of wires or similarly connectedapparatus such as steampipes. Whatever means of transmission is adopted, it should be taken into consideration early in the planning stages to allow the signal to leave the building properly. If underground wires are to be used, conduits should be included in the building and through the foundation. Such means of egress from the building to an outside terminal is probably desirable, even if wires are used above ground, to eliminate at least one lead into the building.

Expansibility -- The possibility of the campus radio station expanding or changing into a student-operated television station may seem remote, and each institution must consider this likelihood in its own way. At least one institution (Yale) has such a station to illustrate the practicality of the idea. The requirements of television in terms of space for cameras, lighting, staging and transmission equipment make the conversion of radio studios into television studios quite impossible, but local situations such as specialized curricula or inability to receive commercial television signals may recommend the location of the radio station near a larger room or a theatre to permit future expansion. Expansion of radio studios themselves demand added acoustic treatment, glazing and conduits, and it may be easiest to enlarge the area if the original office space for the station is so arranged in relation to the control room and other studios that it can serve as another studio. In this way, an adjacent area may be transformed into office space for the radio station and the original office become a permanent studio with little in the way of alteration necessary. Such planning would include the running of conduits, double glazed windows between the office, studio and/or control room, and acoustically treated walls, ceilings, floors and windows. Most campus radio stations specialize in recordings which are collected in tremendous number. Expansion of record storage facilities is a necessity and should be taken into consideration.

Flexibility -- The arrangement of office space as auxiliary studio room permits flexibility as well as possible expansion, and microphone outlets in the control room for use by engineers during emergencies, slack time or some record programs also make for more flexibility. Much of the radio station's programming originates outside the studios. Off-campus broadcasts, such as athletic contests played away from home or concerts or lectures held in non-college buildings, are usually sent over lines leased from the local telephone companies to the studio for transmission to the campus radios, but campus programs can be carried on wires strung for the purpose without the cost of leasing telephone lines. Broadcasting outlets, and booths where possible, should be established at points where most of the non-studio broadcasting originates; such points include football stadia, gymnasia, swimming pools, baseball diamonds, auditoria, field houses, theatres and banquet halls. Leads from these areas should enter the building as inconspicuously and efficiently as the transmission lines. Broadcasting stations should be included also in any union areas which might lend themselves to radio programs, including the ballroom, theatre, student government and other larger meeting rooms, banquet hall and music room. A large meeting room, properly wired and acoustically treated, located adjacent to the control room and connected to it by a sound-proof window, may serve as an auxiliary studio for concerts, choral groups, forums and discussions,and similar programs demanding more space than the usual studio can offer. Equipped with a piano and with the studio window properly draped, the room adds considerably to the flexibility of the building without detracting materially from its appearance.

The radio station can be used for little else than broadcasting and allied fields, such as making recordings for other groups, and it is in this area of multiple use of equipment that it can make the greatest secondary contribution. If tape, wire and disc recordings are made for other sections of the university studio, space and equipment should be allocated for this purpose. It may be that a common news machine serves both the radio station and the campus newspaper. However, a realistic approach must be made to applying the principle of flexibility to areas assigned to non-union groups, as they may resist encroachment, real or imagined, upon their autonomy to the extent that their space and equipment are unavailable to others. Thus, on most campuses it seems unlikely that the yearbook and the newspaper could share a common office despite the similarity of the equipment involved, and the sharing of equipment by the newspaper and the radio station may be equally unrealistic.

Safety -- Because the student radio station invariably means an almost constant manipulation of electrical wires by persons of varying degrees of knowledge and ability, considerable effort should be devoted to proper wiring originally. This means that conduits should be large enough and numerous enough to permit almost any possible wiring diagram which future student technicians and faculty advisors may deem desirable,without innumerable lengths of wire being draped throughout the station quarters. Conduits should lead to the roof for aerials being used in receiving other stations, and to the basement for transmission and receiving lines. All draperies, for decorative or acoustic purposes, should be flame-proof. Non-liquid fire extinguishers, such as carbon dioxide equipment, should be available for electrical fires.

Ventilation in the broadcasting area should be particularly efficient since the doors and windows cannot be opened during broadcasts. Such ventilation might well be separate from the rest of the building's system to eliminate possible transfer of noise to and from other areas. Lighting in the radio station should follow the same principles as those used in offices. Scripts must be written and read, controls watched and correspondence handled.

Appearance -- A quiet, utilitarian appearance suits the radio station quarters. The materials dictate much of the appearance; a cork floor is nearly always brown (although wall to wall carpeting may be any color) and acoustic plaster or tile serves its purpose best if left white, as painting, even with waterbased paint, reduces its value. If draperies are used to absorb sound,they may add to the color of the studios.

Functionality -- The function of the radio station is broadcasting and its design should be aimed at fulfilling this function. Traffic through control areas and, of course, studios should be kept at a minimum. Soundproofing should prevent extraneous noises from the street or union building from entering the studios and should keep studio-produced sounds inside the studio. Sufficient telephone lines should be available to permit the use of telephones and/or teletype while broadcasting from off the campus. Complete soundproofing includes suspension of the studios and control rooms -- so-called "floating" studios -- to prevent the transmission of noise through structural members. The degree of perfection in construction that is desired should be weighed against the expense and the caliber of performance to be expected of the station.

The minimum components of the campus radio station are an office wherein programs are planned, scripts written or typed, schedules outlined, conferences held, records kept, personnel interviewed and assigned, and business transacted; a control room wherein sound is amplified, transmitted and controlled, where programs are synchronized, records played, repairs made and equipment stored; and two studios, each with turntables and microphones, from which programs originate alternately. Larger stations might have some of these functions housed separately so that single offices might be available to such divisions of the station as business, advertising, program and technical, a single room be available for the record library, a shop assigned for maintenance and repair. Several studios of varying sizes, complete with pianos, are most desirable.

The heart of the radio station is the control room. All programs go through here and depend upon signals from here for starting and ending. In emergencies, programs may be broadcast from here. Ideally located, it looks directly into all studios and monitors all programs. It operates whenever the station is on the air. Like the studios, it is protected from casual visitors and outside noises. It probably stores all the spare parts needed to keep the station on the air. It is arranged to permit a single engineer to operate all its broadcasting equipment when necessary, even to keeping the station on the air with announcements and record playing. Its equipment is expensive, since it demands excellent turntables, receivers, transmitters and controls, all of which can be purchased commercially. The kind of equipment to be used should be determined well in advance to permit the control room to be designed and wired accordingly.

The studios should be large enough to hold top-quality turntables, record racks, conference tables large enough for four or five persons with chairs, and room for moving about. If possible, one should be large enough to accommodate a piano and a dozen people for chamber music, vocal octets and other live productions. Five or six microphone outlets should be available in each studio. Clocks on the building master system and on-the-air signals, operable from the control room, should be clearly visible. Swept-back chairs are advisable in the studios, as sound-proofed walls are easily damaged by chair backs and other furniture. The elimination of outside windows assists in soundproofing the studios, as does the use of non-parallel walls.

The layout of the whole station should permit view of all studios from the control room, including any auxiliary studios, such as a large meeting room, if this is possible. Access to all studios must be through office or control room space to prevent the accidental disturbance of programs by intruders from other parts of the building and, if possible, be gained through double doors. Each studio must be accessible independently of the others and from the control room. The main entrance to the station should be in the office or a reception room to prevent disturbances in the control room and other areas.

The record storage area should provide sturdy racks for the heavy disks, including room for sixteen-inch transcriptions and facilities for filing and cross-filing. Filing facilities for tape recordings should also be provided, with particular thought given to the possible expansion in the field of pre-recorded tape. A cross-filing system, as varied as possible, is of great assistance to program directors, and Kardex or similar systems should be studied for their application to the station's record collection. A table or desk and chairs should be part of the record library to permit easy selection of recordings. This collection, a prime target for pilferage, should be easily locked to keep unauthorized persons away from it, and a separate storage closet or cabinet should be available for new transcriptions awaiting indexing. Sturdy fiber tabs, gummed labels or decals should be affixed to all dust jackets to permit efficient refiling.

The planning of a radio station demands expert attention with the equipment to be used incorporated from the beginning into the structure. The planning committee should include student and faculty members from the technical, program and business field, and experts in the broadcasting business. Other campus persons who might serve would be representatives from the music, English, drama, athletic and journalism departments. Many union buildings -- Wisconsin and Oklahoma Universities, for example -- house complete university (as contrasted with student) radio stations, and visits to such buildings, as well as commercial and student stations, are highly recommended before the planning is far advanced.

THEATRE

Need

Like so many other parts of the union building the theatre must be custom-built to suit its campus. It is quite likely that a union building located near a modern, well-equipped theatre can utilize these facilities for its program and not need a theatre of its own. On the other hand, the demands on such a theatre by dramatic and other groups may render the theatre unavailable for the variety of activities which the Classified Facilities Table indicates may be held therein, thus making desirable the inclusion of a theatre in the union building. With a well-housed drama program already in operation, the theatre requirements may be pared down so that nothing more than an auditorium and platform suits the union's needs. Such a solution appears most questionable, however, since it provides little more than a forum for speakers, a location for motion pictures and stage for formal music concerts. Such activities as variety or vaudeville shows, fashion shows, orchestral and choral concerts, sing contests and dance recitals become difficult to present without proper stage, scenery, dressing, shops, wing and lighting facilities. The use of road shows -- ballet, drama, opera, and the like -- by the union is obviated. It may be that such activities can be housed elsewhere, but the demands on theatres of dramatic groups for practice and for rehearsal and staging time, of music groups for practice and concert time, of assemblies, meetings and conferences for auditorium time, of departments and organizations for space for motion pictures, lectures and demonstrations, indicate that a close study of all present demands upon theatre facilities be studied and that future possibilities, particularly as suggested by other campuses with adequate union theatres (Wisconsin, Brown, Cornell), be considered before plans are drawn up. The place of other existing theatres and assembly halls in the campus scheme of things, including policies governing their use, should be given grave consideration.

If existing theatre conditions are inadequate, the problem of what to include is somewhat simplified. The union building as the center of things and with its auxiliary services and areas (ticket selling, refreshments, lounge spaces, central offices, master schedule) is a logical structure to contain a theatre (but not necessarily the only one), and a complete theatre there should serve the campus in a variety of ways. Thus, a theatre with enough comfortable seating, efficient stage, proper dressing rooms, shops, lobby, projection equipment, storage, rehearsal rooms, ticket and box offices, lighting, orchestra pit and equipment adds materially to the educational opportunities of the union and the whole campus.

It should be borne in mind during the planning stages that such academic departments as drama and music quite likely require the use of the theatre. Administrative policies agreed to in advance may assure maximum use of the theatre to the benefit of all, without monopolization by any single group or department. Centralized management of the union is recommended for all parts of the building. Emphasis on the desirability of this administrative policy may be gained if original planning stresses the whole range of uses which the theatre embraces rather than singling out drama, motion pictures, assemblies, music or some other aspect of the program. Naturally, the cooperation which must exist between the union and other campus groups and departments must also be emphasized early, and the needs of all concerned well understood.

> The sensible approach to the problem of planning an auditorium and stage that must serve for numerous. . . activities is a careful analysis of the requirements of each in respect to their demands upon the building. With these separate demands listed it becomes possible to select those activities that can be housed together harmoniously and in certain instances to adjust the plans of the theatre to meet them. Under these conditions it is acknowledged that compromises are likely to be made in the plans, that the ideal may not be achieved for one without in some degree handicapping another. A theatre carefully planned in this manner will meet the requirements assigned to it.[1]

However, there have been efforts made to house within a single building activities that differed so radically in their requirements that there is no hope of finding a common solution. A union theatre would seem to suit most of its purposes if it houses the requirements of a fairly orthodox collegiate drama program and adds such items as an elevating forestage-orchestra pit; audience access to stage for variety shows, sing contests and the like; fluctuating seating capacity by means of sliding panels or draperies; reception or lobby lounge; broadcasting facilities; possible combination craft-scenery shops, and still and motion-picture equipment to achieve the flexibility which is an earmark of the union building.

To function completely the union theatre would be composed of:

Auditorium
Stage
Forestage
Orchestra Pit
Proscenium Arch
Dressing Rooms
Scene Shop
Costume Shop
Light Booth
Makeup Room
Rehearsal Room
Projection Booth
Sound System
Screen
Stage House
Lobby
Ticket Office
Scenery Storeroom
Control Board
Rest Rooms
Coat Room
Lounge or Green Room

Some of these facilities, such as lounge, coat room, rest room or rehearsal room, may be a part of the union building and serve a double purpose, so that a nearby lounge may be used for receptions or a properly shaped meeting room double for use during live rehearsals.

Auditorium

Size -- The number of seats to be contained in the auditorium is a question which each campus must decide for itself. If the whole campus is to gather for convocations, assemblies or chapel (a doubtful premise on a large campus), then it must be large enough to hold everyone with at least space for anticipated growth of the institution. Local interest in drama, music or the motion picture affect the decision. Expected policies such as length of run of a stage production or number of showings for a film demand consideration.

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[1] A. S. Gillette, Planning and Equipping the Educational Theatre (Cincinnati: National Thespian Society, 1945), p. 7.

New programs, such as guest artist and travelling companies, made possible by the addition of appropriate facilities, may require seating above that needed for existing programs. Location in or near a metropolis may mean that such new offerings attract the general public in larger numbers. Certainly indications of growth of enrollment, faculty and staff should be considered.

Flexibility -- In addition to enough seating there remains the problem of flexibility. One hundred persons at a recital or intimate drama appear lost in a hall of a capacity of a thousand or more, and much of the rapport among audience members and performers becomes lost. Dividers in the auditorium can provide varying sized seating arrangements which, when used with tormentors and teasers for adjusting the size of the proscenium, provide a versatile theatre in which the sight lines are always acceptable and the atmosphere right.

Shape -- The shape of the auditorium is limited by its sight lines, which are merely the lines of vision projected from the various seats to the portion of the stage visible beyond the proscenium arch. Thus, persons in extreme side seats might find much of the action on their side of the stage obscured by the arch while they can peer deeply into the wings on the other. The better planned theatres have acknowledged this requirement (sight lines) by having the first few rows of seats no wider than the actual width of the proscenium arch. A rectangular form converging slightly as it approaches the proscenium has been found most satisfactory. Roughly the same requirements exist for showing motion pictures since the flat screen viewed at an extreme angle distorts the image. No seats for motion-picture viewing should be located beyond a line thirty-five degrees outside the perpendiculars drawn from either end of screen. The best seats are directly in front of the screen and about three to five times its width from it. No viewer, whether in the orchestra or balcony, should see the screen at more than a thirty degree angle with the stage floor.

Seating -- There appears to be no ideal seating arrangement for theatres. Ideally each person should have an unobstructed view of the stage or screen and, since short persons are certain to be seated behind tall ones, the abrupt rise in the auditorium floor needed to assure clear vision for all results in the aisles no longer being ramps but rather hills. The use of stairs is dangerous in such areas, and so inclines of about one foot in every eight (stage) or ten (screen) feet are recommended compromises. Seats should be staggered so that patrons are looking over the shoulders of those in front, rather than their heads. Such staggering results in some loss of seating capacity but affords much better viewing. If a balcony is used, it may require an incline that demands risers or steps in the aisles, thereby furnishing enough height for each succeeding row that staggering is unnecessary.

Rows of seats parallel to the proscenium arch are the most economical arrangement in terms of capacity, but the occupants on the ends of the rows are twisted to the side in an effort to see the stage and so an arc, the center of which is a spot on stage somewhat upstage of the trapped area, is used to establish the first row.

Arrangement of the rows of seats and of aisles has considerable bearing on the functionality of the auditorium. Naturally, the best seats in any theatre are those directly in front of the stage, yet the traditional plan of a center aisle and side aisles leading to a rear entrance eliminates many of these seats in favor of aisle space. The so-called continental method of seating which provides wide rows of seats and entrances from the sides of the hall permits much freer and more direct circulation. If the entrances lead from corridors into the auditorium, the problem of ticket control is not much greater than it is in the traditional plan where all persons enter by one door. Since archaic fire laws in some areas insist on no more than fourteen (more or less) seats in line without an exit aisle, regardless of the space between seats, any seating arrangement should be checked for its legality. Side entrances are needed if the hall is arranged to permit its division into sections by means of draperies or folding walls.

With continental seating, seats should be 42 inches from back to back. This provides optimum comfort, permits traffic to and from seats without disturbing others,and provides seating where aisles might be. Where legal and other limitations rule out continental seating an ideal back-to-back seating width is 3 feet, an acceptable one 34 inches and a minimum 32 inches. The kind of seating -- retracting, self-lifting -- makes some difference in the width of seat rows, as a chair which can be retracted to permit passage of those going to or leaving seats and the seat of which automatically returns to a lifted position when not occupied increases mobility throughout the hall, decreases the interference from late arrivers and early leavers, and provides more leg room by utilizing more floor space.

Safety -- Mention has already been made of such safety provisions as gradual sloping floors and frequent limitation of the number of adjoining seats permitted in a row. Such provisions stem largely from the fact that a theatre is a place where large numbers of people gather at the same time under darkened conditions with their attention focused on the stage or screen. These people often leave simultaneously (nearly always from a union theatre), thus straining exit facilities to the point where normal safety precautions are difficult to practice. It is nearly impossible, for example, for members of a departing crowd to see a faulty threshhold or defective stair tread, hence extraordinary precautions should surround the planning and construction of a theatre.

For financial reasons it is desirable that all persons entering the theatre pass through one or two entrances to permit the collection of tickets. For safety reasons, however, it is desirable that, in an emergency, all persons in the theatre be able to leave quickly by a nearby exit. To make this possible, fire codes demand a number of fire exits, properly marked and equipped with anti-panic hardware. Because this hardware is designed to open easily from the inside, it lends itself to illegal entry from collusive action by those outside with persons who have entered properly. There seems no way of avoiding the necessity of utilizing such hardware, and extra watchfulness, or a special alarm system, seems to be the only means of countering its presence. Exit doors should swing freely outwards and not lead directly onto busy streets or other hazardous areas such as steep inclines. Access to such doors should be wide and unimpeded. Shielded lights should be installed at all points of danger such as in stairwells, aisles or by risers,and should be independent of the house lights, perhaps joined with the exit light circuit. Emergency lights, operated by batteries, should illumine the hall, passageways, stairwells, corridors, lobbies and exits automatically whenever a power failure occurs. Carpeting in a theatre is most desirable as it deadens noise as well as being decorative, but it must be carefully laid to prevent possible tripping over free ends. Metal nosing may be indicated if a strong bond cannot be established between the floor and the carpet. All textiles -- draperies, carpeting,upholstering -- should be treated to make them fire retardant.

Stage

Size -- The stage is the heart of the union theatre. While most of the people who sit in the audience see very little of the stage,they cannot help but notice the results of an inadequate one or appreciate the results of a good one. The wide range of activities to be anticipated on a union stage makes its completeness most important. The width of a proscenium arch should be about as follows:

Intimate drama	26 feet wide
Drama	30-40 feet wide
Musical	40-50 feet wide
Opera	60-80 feet wide

The outstanding Wisconsin Union theatre has a 35-foot-wide proscenium. The expected uses of the stage and size of audiences anticipated should be the governing factors in determining the size of the arch. It seems safe to say that a general purpose stage such as the union's should be about forty feet wide with tormentors available for shortening it. Even this on a campus with large musical groups may not prove wide enough, but care must be taken that actors and interior sets not be dwarfed on a huge stage. The proscenium opening should be about half as high as it is wide.

The entire stage should be at least twice as wide as the proscenium, and three times as wide is more satisfactory with the added width (over that of the arch) distributed evenly in both wings. In depth the stage should be about one and a half times the length of the proscenium. The stage between the proscenium arch should be trapped (removable floor boards) to about one half its own depth.

Forestage -- A forestage or apron is needed in the union theatre to enhance its versatility, although it may well be combined with an elevating orchestra pit. An ideal concert hall should be a platform within a room instead of a stage behind a proscenium, with a ceiling over this platform to reflect the sound. A large forestage approaches this definition of a concert platform. In conjunction with an elevating orchestra pit, it is possible to lower the pit for added seating or accompaniment while the apron is used for speaking, recital, scene changing, entertainment; or to raise the pit to obtain a forestage capable of seating a large orchestra, or for use by larger stage productions such as operettas. This pit may be split into two longitudinal sections for greater flexibility. The forestage or apron may run from 2 to 15 feet wide, and the orchestra pit (whether part of the forestage arrangement or not) should allow a base of 100 to 200 square feet plus 10 square feet per musician. If only dramatic and cinematic presentations are intended, then the forestage could be eliminated, as its presence serves to reduce the intimacy of the actor-audience relation. However, in view of the multiplicity of uses to which a union building is put, it seems doubtful that many institutions should plan on so limiting the use of the theatres.

The auditorium and backstage should both be connected to the apron or forestage to permit speakers and others performing in front of the curtain to get there without groping through drawn curtains. Extension of the apron to corridors which connect the auditorium with backstage is one reasonable solution. If an organ is included, its position should render it easily seen yet not in the way. An elevating organ at one side of the orchestra pit is a common solution.

Stage House -- Many theatre-goers are unaware of the importance or even the existence of the stage house. It is not visible during productions and its function is obscured largely by intermission curtains. It is here, however, that flying scenery is kept to permit quick scene change and where the cyclorama goes when rolling scenery and properties are changed on stage. The stage house in a union theatre probably also holds the motion-picture screen and speakers as well as a variety of draperies. The stage house should be at least three times as high as the working height of the arch or of the working curtain, and preferably four times as high. A gridiron at least 6 feet below the roof should cover the stage area. A skylight equal to one-eighth of the stage area should top the stage house (although fire doors may be substituted for the latter in some communities) to provide for ventilation and the escape of flames and gases in case of fire. The fly area above the stage should be completely unobstructed and no windows built into the stage house. Lighting is needed for those working there, and heating radiators are usually mounted in it. Freight and passenger elevators may both be indicated in theatres where shops or dressing rooms are not at stage level. All flying equipment should be mounted on counter-weights with the locking bar located on the same side of the stage as the stage manager and control board, if the latter is backstage.

The stage of a union theatre, following aforementioned standards, would be at least 80 feet wide and 60 feet deep. The acting area is about 40 feet wide, 20 feet high and trapped completely to a depth of 20 feet from the proscenium. At least 20 feet of off-stage space is available on each side, and the stage house is between 60 and 80 feet high. A forestage of about 6 feet wide runs beyond the proscenium to an access corridor leading both backstage and to the auditorium, and is augmented by an elevating orchestra pit which, when raised, provides added apron room. Such a pit, curved in front to follow the line of seating, protrudes about 20 feet (at its apex) into the auditorium, if it is to hold 50 musicians in its lowered position. Raised to floor level it could seat double that many patrons, and at apron level permit about 75 musicians to play on this enlarged forestage. The viewing angle of those seated in the front seats should be no more than thirty degrees, which means that the stage must not be too high from the auditorium floor.

In addition to the 60 or 80 feet above the stage floor, some 8 or 10 feet beneath at least its trapped area are needed to permit such entrances and exits as may be required there. This area can serve as property and equipment storage, but if flats are to be stored there, nearly double the height will be needed for them and some means for their removal included in the plans. The stage floor itself should be of soft wood laid over a wooden subflooring to permit easy nailing and screwing as well as inexpensive replacing. Traps should be sturdy and fit tightly to prevent squeaking. A floor cloth may be desired to deaden stage sounds and, if a glossy forestage is used, an extension of the cloth eliminates reflection glare there which otherwise might occur during film showings.

The stage curtain should operate both manually and electrically, and be capable of opening from the middle or raising into the stage house. Teasers, tormentors, the cyclorama and stage draperies should be designed for quickness and completeness of use. The cyclorama should envelop the acting stage with plenty of room left for scenery at least ten feet from the edge of the proscenium.

Circular stairs leading to the gridiron conserve needed stage space, and counterweighted scenery lifts permit flying and lowering scenery.

Lighting

Proper lighting of the stage is all-important, particularly in a multipurpose theatre such as the union building is likely to embrace. Concerts, lectures, musicals, recitals, plays, variety shows, choral groups and the many other activities likely to occur there demand the utmost in flexibility. The light-plot of stage productions demands innumerable combinations and intensities, available immediately and imperceptibly, to augment the action on the stage. The lighting must make visible that which transpires on the stage. It helps to create illusion, to reveal form and to create psychological and compositional effects. To achieve its purposes the theatre lighting consists of spotlights, which throw well-defined cones of light; floodlights, which give off diffused light; and strip lights, which throw shadowless light and kill shadows. A forestage requires additional lighting, particularly when the curtain is closed, and footlights (which can disappear into a recess when not needed) often are needed for this task. Along with them, lights from the light booth and the beams may be used for curtain illumination.

The acting stage, divided into areas of acting, has each area lighted by one or more spotlights as well as by border strips or footlights. The downstage areas are lighted by booth, beam or balcony spotlights, the upstage ones from behind the proscenium. Visibility is assured primarily by the spotlights; dramatic composition and other effects are furnished by strip lights mounted behind the proscenium frame and by border lights, footlights, cyclorama lights (which may be recessed in the stage), floodlights and backing strips.

The lighting behind the curtain is flexible in that it may be moved about by moving battens and floor stands. The light from in front of the curtain is both fixed and movable, since the footlights are permanent installations,and some fixed spotlights may be installed in the light recess, beam or booth (whichever may be used). Focusing directional (follow) spots for variety shows and musicals may also be installed in a light booth. The auditorium source of stage lighting (recess, beam or booth) should extend the width of the seating area to permit as much flexibility as possible. Light from this source should be directed towards the stage at an angle of 45 degrees with the stage floor, while the motion-picture projection angle should be between level and 12 degrees and not exceed 20. This makes a combination projection-light booth undesirable,although it is customary to install the follow spot in the projection booth.

Central control of all lighting, including house lights, is paramount. Lighting can suggest an environment, weather, season, time of day, can emphasize or remove, cast great shadows, change colors and forms, focus attention, build suspense. To do these things,it must be controlled perfectly and on cue. Elaborate wiring plans, complicated control boards and intercommunication systems are needed,and the planning committee must be prepared to defend what is undoubtedly a very costly installation. Even if a complete lighting system cannot be installed,provisions for one in the way of conduits, expanding control boards, light booth and a master plan for the future should be made. Supplying the peak electrical load may demand special attention.

Control Board

The control board in a modern theatre is best located to the rear of the theatre in a booth where it can be operated by persons who can see all the stage action, although it is often backstage or in a booth in the orchestra pit. Connected by an intercommunication system with other portions of the theatre, including backstage, the operator can participate in the proceedings almost as though he were on stage. A duplicate board, but portable, which can be plugged into the auditorium floor for the convenience of the director during rehearsals was incorporated into the Hunter College Theatre, thus permitting the director to work out the light plot directly. This board also serves as a teaching device in a theatre where the permanent board is backstage. An inexpensive refinement of this permits installation of an intercommunication outlet in the auditorium floor from which the director, over a plugged-in set, requests lighting effects from the master board. The master board is the point of final control of light, including its distribution, intensity and color. It should be highly flexible, easily operated and compact. Its operator should be able to participate in productions much like an orchestra leader accompanies an opera.

Light Booth

The light booth is usually in the ceiling to provide the angle of light desired,and extends across the audience to permit a variety of lighting angles, although spotlight cuts or slots extending either side from the booth with catwalk accesses suffice. It is reached from backstage by stairs and catwalk,and requires forced ventilation to remove heat, as well as fumes, if carbon arc spotlights are employed. Fixed spotlights may be trained from here or from slots, each to illumine specific areas of the stage so that when all are on the entire downstage area is lighted. One or two follow spots are needed and, if carbon arcs are used to obtain white light or for a long throw, a motor generator or rectifiers is required. (In this case some compromise may be indicated whereby the carbon arc spots are located in the projection booth, using the same rectifiers or generator. If so,it may be desirable to locate the control board here rather than in the light booth.) The booth needs metal storage cabinets for color frames, bulbs, wire, parts, tools, carbons, fuses and other paraphernalia.

Dressing Rooms

The dressing room requirements of a union theatre are variable since they may be used by a soloist one night and a company of one hundred the next. Here the flexibility of the union building can serve in good stead, as areas used for other purposes such as meeting or rehearsal rooms, if designed properly, can serve as auxiliary dressing rooms with the addition of make-up tables, lavatories, and adjacent toilets and shower facilities. With folding walls closing off the specialized equipment and with storage space for rolling costume and clothes racks nearby, these areas may be transformed from dressing rooms to multipurpose rooms with little effort. Several permanent dressing rooms, each large enough for two or three persons, should be incorporated into the plan,and two chorus dressing rooms, one for men and one for women, are desirable unless adequate multipurpose rooms are nearby.

Each place in a dressing room should have a seat, table or bench with drawer, well-lighted mirror and a tissue dispenser. Floor space for cross-traffic and rolling racks should be available. The rooms should be well-ventilated and equipped with wash basins, toilets and showers. At least one dressing room should be available on or just off stage for quick changes,and all should be within a few steps of the stage. Soundproofing is desirable to prevent noise from interfering with productions. The dressing rooms should not be available to unauthorized persons and access from outside or other portions of the building should be guarded by a doorman. A safe for valuables may well be incorporated into the dressing room area for safety's sake.

It may be considered desirable to separate the dressing rooms from make-up facilities by reducing the size of the dressing rooms somewhat and installing a large make-up room where all cast members are made up under more direct supervision. Banks of mirrors, benches and tables as previously described line the walls, and wash-up facilities are provided.

Scenery Shop

While the audience may be conscious only of the work being done by the actors,there are a number of persons behind the scenes who must function properly if the productions are to succeed. This is particularly true in drama where scenery and properties play such an important part. Since the union is engaged in education, it should present facilities which offer real learning opportunities. Important among these non-acting facilities is the scenery shop where students can design, manufacture, paint and store the sets they create.

The scene shop should be near the stage and on the same level with it to permit the rolling of completed sets to their final position. It should be high enough to accommodate the tallest units of scenery when mounted on dollies, with the door to the stage equally as high. This door, as well as the shop itself, should be soundproofed to prevent the passage of noise, thus permitting simultaneous use of the shop and the stage. The shop floor should provide unencumbered space equal to that of the acting stage to permit final fittings of the sets and attaching canvas to the flats while they are laid out. With such an arrangement, scenery may be built to final size in the shop, thus keeping the stage clear for other events.

Racks for lumber storage are needed, as are benches, machine and hand tools, storage cabinets and a free inside wall for painting flats. This latter, if possible, should be augmented by a well about twenty feet deep and as long as the proscenium. This well, just wide enough to permit a flat to be lowered into it by means of counterweights, enables students to paint scenery from the top down without recourse to ladders or platform, as painted areas are hoisted out of the way, bringing the next sections up from the well for painting. The paint section of the shop should be particularly well ventilated and supplied with compressed air lines, hot and cold running water, hot plates, and fireproof paint and brush storage. Twenty foot-candles of illumination should be available at all workbenches. A stage door large enough to admit grand pianos, trailers, sets and other cumbersome articles (about twelve feet wide) should open into or near the scene shop, and all other doors between it, the shop and the stage should be equally as large. If wagon stages are involved, there must be room enough for them back stage as well as in the shop.

In addition to the scene shop, room is needed for the storage of properties and for used and stock scenery. The area under the trapped stage, if properly constructed and ventilated, may be used for this, and areas in other parts of the building may also be utilized, as this is largely dead storage. Some arrangement for cataloguing this equipment should be made, precautions taken against the creation of a potential fire hazard, and easy access assured.

Costume Shop

Like scenery design, the creation of costumes has an educational contribution to make and a costume shop offers practical experience in this field. It need not be as immediately connected with the stage as the scene shop, but should be near the dressing rooms. Sewing machines, tables, ironing boards, pattern benches, fitting area, dyeing facilities, full length mirrors, rolling storage racks, and dead storage closets and trucks should be included here. Fifty foot-candles of illumination should be supplied at the working surfaces.

Rehearsal Rooms

Rehearsals are more than mere mouthing of lines. They grow in intensity until they need scenery and costumes. There is a considerable period of time, however, during the development of productions when any suitable area approximating the size and shape of the acting stage can be used for rehearsing, thus freeing the theatre for other activities. Provisions should be made for multipurpose rooms offering space equal to the acting stage area. These rooms may be used by casts of different productions for their early rehearsals as well as for other purposes. Should they be intended for orchestral or choral rehearsals as well, they should be soundproofed, and plenty of instrumental storage space provided nearby. It is quite possible to use the green room, lobby, theatre lounge or other infrequently used theatre space for rehearsals, if thought is given to this originally and such things as privacy, furnishings and acoustics are considered.

Projection Booth

The projection booth, if it is complete, may be called upon to project thirty-five and sixteen millimeter films, silent and sound, at varying speeds, slides, and color transparencies. From it announcements may be made, records played, spotlights and curtains operated, control boards run or house lights dimmed. It should be located at the rear of the hall with its ports eight or more feet above the floor of the last row, and no more than a twenty degree angle made between its beam of light and the line of the stage projected.

The projection booth should be reached by a separate flight of stairs and serviced by a dumb-waiter for films and other equipment. It should conform to local construction codes, which probably mean fireproof construction, automatic ventilation, port and door closers, glass ports, sprinkler or carbon dioxide system, steel film cabinets and a special rewind and inspection room. Even with safety film used almost universally, the fear of booth fires is such that strict requirements nearly always govern their construction. If labor unions enter the operation, a check on local requirements may save adjustments later on. Toilet facilities preferably should be provided in the booth if it is in much use.

The many new processes recently introduced in the cinema field make definite recommendations on equipment difficult. For the present, however, a well-equipped booth would include two thirty-five millimeter sound projectors side by side, complete with carbon arc lamps, optic and magnetic sound, and various lenses for wide-screen showings; two sixteen millimeter sound projectors, side by side, with lenses to be decided at the time of installation and the kind of lamps determined by the length of throw; one variable-speed sixteen millimeter silent projector; a slide projector for transparencies; an opaque projector; two amplifiers with microphones; a record player; film cabinets; storage cabinets; fire extinguishers; a rewind table and set; splicers for both film widths; a tool kit and sand buckets for hot carbons.

Each team of motion-picture projectors must be synchronized to permit immediate audio and visual changeovers from any of the operating positions. Each of these machines needs its own port, and another one is required for the still projectors. Tables with casters or wheels should be provided for the various portable projectors. If the sixteen millimeter projectors are to be used elsewhere, proper height rolling tables should be provided and incandescent light sources used to permit this flexibility in use. Viewing ports are needed by each machine for the operators. If spotlight equipment is to be housed in the booth, it also requires ports. It should be possible to shutter each port to prevent light leaks into the auditorium, and the booth should be soundproof to trap all noises inside. The thirty-five millimeter equipment should be permanently mounted on vibrationless bases.

Each sound projector should connect with a booth monitor to permit the operator to follow the sound. An intercommunication system should tie in with backstage, dressing rooms, orchestra pit, scenery shop, green room, rear of the auditorium, the ticket office and the control board. If the control board is not in the booth, it should be possible for the projectionist to control the house and footlights from the booth, to open and close the stage curtain, and raise and lower the screen. Special electric lines are needed in the booth for direct current and two hundred and twenty volts, and a motor generator may be desired. Electrical leads for projectors should enter at position through the floor, and all projector controls should be on the front wall of the booth.

Beams of light from the projection booth to the stage or screen obviously should be unobstructed. Stage valances, balcony railings, standing persons or similar obstructions should not obscure the projection. When dropping the screen into position it should not be necessary to raise valances or remove other objects, including stage risers or standing sets, and preliminary planning should prevent this. The screen itself must be masked for the largest picture to be projected on it, with flexible masking desirable when showing smaller framed pictures. A simple bolt and eye arrangement permits anchoring the screen to the stage in the same position each time to permit maintaining the same focus plane.

Sound System

So-called stereophonic sound embracing the placement of a number of speakers about the auditorium may be obtained by incorporating these speakers and the necessary conduits into the original structure. Such speakers may also be used with the stage sound system. At least one large, flying speaker is needed behind the screen to provide the main source of sound. This speaker may be attached to the screen or separated from it. An additional large speaker over the proscenium for the public-address system, when tied in with other speakers in the hall, usually meets the requirements of lecturers in even the largest theatres. Since such a system may be used for music (recordings, variety shows, musical comedies) as well as motion pictures it should be of top quality. Controls are needed backstage as well as in the projection booth,and speakers installed in the various lounges, lobbies and rest rooms for announcements of curtain calls, should be part of the system. Microphone connections should be installed in the apron floor to permit easy and flexible use of the public-address system by speakers. It should be possible for each member of a panel or discussion group to use his own microphone, and for a sound operator to use any combination of speakers in the hall he desires. The intercommunication system permits the relaying of instructions to such an operator from the rear of the auditorium, with consequent adjustment of volume whenever necessary. (Stations here and back stage at the prompt position should be equipped with optional light signals to prevent interference from buzzers or bells,and the auditorium station should be encased in a locking case to prevent pranksters in the audience from abusing it.) Outlets for drop microphones should be available to permit suspension of such microphones over the stage from the gridiron. Pick-up from both apron and stage microphones for broadcasting and recording purposes should be possible. It may be desirable in some theatres to install recording and radio booths, properly glassed in and soundproofed, in the rear of the auditoriums. (Such arrangements, along with separated viewing rooms for critiques, exist in the small laboratory theatre of the Wisconsin Union.) If television is a possibility,special booths and equipment are needed.

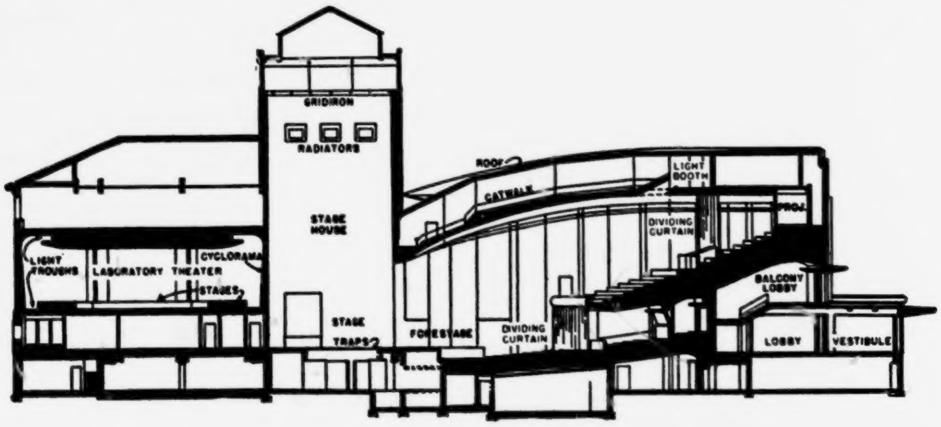
Lobby and Foyer

The hundreds of people who use the union theatre present a crowd handling problem. They arrive almost together and leave simultaneously. They congregate between acts, patronize the ticket office just before the start of a production,and wait inside for later arrivals or for transportation. Some sort of space is necessary for such people to move or stand about in,and so foyers and lobbies are incorporated into theatres. Approximately one square foot of foyer space should be allocated for each seat,and nearly double that amount (one and a half to two square feet) for a lobby. A marquee should protect arrivers from the weather.

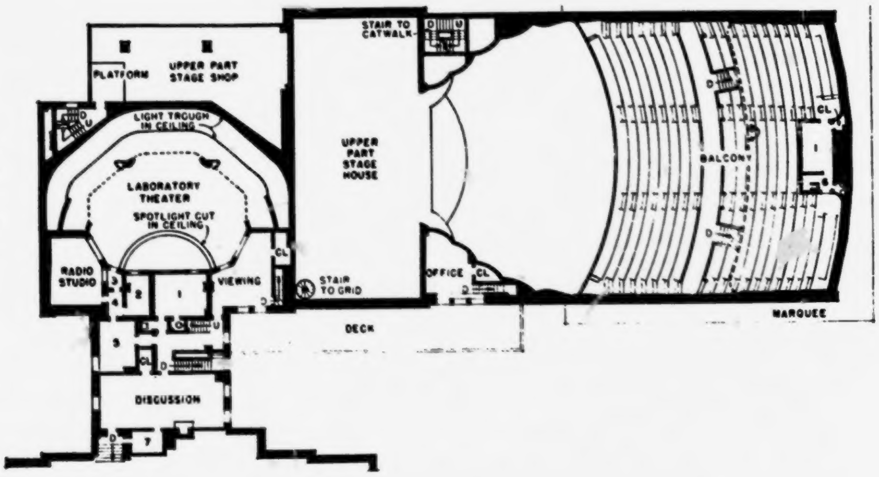
The lobby might be thought of as the outside of the building which is inside, it offers protection from the elements and provides waiting space. Possession of a ticket or other means of entrance permits admission from the lobby to the "inside" of the theatre or the foyer. The box and ticket offices are usually located in the lobby. If a balcony is included in the theatre, it should have a lobby of its own to act as a landing for stairs leading from the foyer to the balcony,as well as from the stairs or ramps leading from this lobby to the balcony seats. If large enough, either the lobby or the foyer may contain a check or coat room, although it is more practical for such a room to be located beyond the ticket collection point to permit its use during performances without pass-out tickets being issued. For this same reason rest rooms should be located beyond the ticket collection point. Drinking fountains should be handy to all areas of the auditorium, and smoking stands located wherever smoking is permitted. Public telephones should be installed in some of these public spaces.

Considerable wall space is represented in the foyers, lobbies and promenades of the theatre, and such space may well be utilized for gallery displays. Sufficient display space should be reserved for advertising coming events.

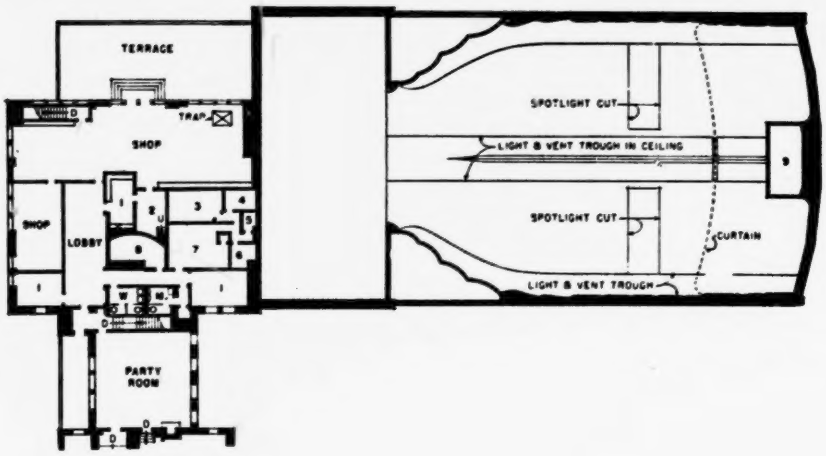
PLATE 111—A Highly Flexible Union Facility


GRIDIRON
RADIATORS
STAGE HOUSE
ROOF
LIGHT BOOTH
CATWALK
PROJ.
DIVIDING CURTAIN
LIGHT TROUGHS
LABORATORY THEATER
CYCLORAMA
STAGES
BALCONY LOBBY
STAGE TRAPS
FORESTAGE
DIVIDING CURTAIN
LOBBY
VESTIBULE

Section through both theaters. *Note position of dividing curtains with which large auditorium capacity can be varied. Loges at rear of orchestra mezzanine have disappearing glass fronts which permit their use as discussion groups during a performance.*


PLATFORM
UPPER PART STAGE SHOP
STAIR TO CATWALK
D
U
LIGHT TROUGH IN CEILING
LABORATORY THEATER
SPOTLIGHT CUT IN CEILING
UPPER PART STAGE HOUSE
BALCONY
CL
1
6
RADIO STUDIO
3
4
2
1
VIEWING
CL
STAIR TO GRID
OFFICE
CL
D
MARQUEE
DECK
5
CL
D
DISCUSSION
D
7

Second floor: *1. Projection room, 2. Radio control room. 3., 4. Radio directors' rooms, 5. Listening room, 6. Rewind room, 7. Kitchenette. 8. Dividing curtain.*


TERRACE
D
TRAP
SHOP
SPOTLIGHT CUT
LIGHT & VENT TROUGH IN CEILING
9
SHOP
LOBBY
1
2
U
3
4
5
8
7
6
SPOTLIGHT CUT
CURTAIN
1
W
M
1
D
LIGHT & VENT TROUGH
PARTY ROOM
D
D

Top floor, *showing location of ceiling cuts in main auditorium: 1. Craft shop office, 2. Storage, 3. Photo enlarging, 4. Contact printing, 5. Film loading, 6. Negatives, 7. Photo workroom. 8. Play Circle light booth, 9. Projection room.*

Wisconsin Union Theatre, University of Wisconsin
Madison, Wisconsin

Ticket Booths

If advance ticket sales are made for most campus events at an information center or ticket office in the union building,it seems only natural from the standpoint of economy and convenience that theatre tickets also be vended there. However, a ticket office is needed for sales at the theatre door and undoubtedly should be installed in the lobby near the theatre entrance, leaving enough room in the lobby for the formation of a queue. The number of ticket windows or booths depends upon the number of seats as well as the advance sale habits of the campus. At least two windows should be provided to prevent complete stoppage of sales should one window be stalled by exhaustion of change, difficult customer or similar circumstance. The ticket booths should be continuous, except for a shelf barrier between each, to facilitate quick exchanges of cash or tickets. Additional windows for reservations and advance sales may be desired in larger theatres.

The booths themselves should be glassed-in, with ports for communication and exchange. Their shelves should be at least three feet high to service standing customers, and cashiers should be provided with swivel stools. Each booth should be equipped with a cash drawer, ticket rack, roll ticket dispenser, a change maker and price indicator. Dividers in the lobby should direct traffic to the window and make breaking into queues difficult. Some theatres may need a box office adjoining the ticket office where reservations and advance sales are made, records kept and business transacted. Such an office contains telephones and a safe which otherwise would be in the ticket office. If a box office and ticket office can adjoin the dramatic offices,it is quite possible to effect economies in payroll during advance sales periods, but such an arrangement is difficult to incorporate into the front of a theatre and has little else to recommend it.

The collection of tickets normally occurs between the lobby and the foyer, with stubs returned there. Entrance by single file, whether through narrow doors, half open fire exits, velour roped lanes or permanent steel railings, assists in the orderly admission of patrons. Permanent railings are undesirable (and may be illegal) because they restrict egress and make multiple use of a foyer more difficult. Portable standards or pipes which screw into threaded floor receptacles serve for the attachment of velour ropes. Tickets may be collected much faster than sold so that two stations usually prove sufficient for all but the largest theatres. Each station needs a standard ticket receptacle which permits deposit and mutilation of all stubs.

Coat and Rest Rooms

Coat rooms, in theory at least, should provide hanger and hat space equivalent to the number of seats in the theatre, but climate does much to determine the amount actually needed. Dispersal of such rooms so that those sitting in the balcony may have access to their own coat room assists in emptying the house after crowded performances. Combination self-service and check rooms permit flexibility to meet varying requirements. Rest rooms should be dispersed so as to service the various sections of the hall.

Green Room

Traditional to the theatre is the green room, a lounge where actors and artists may relax or receive guests. With an adjoining serving pantry or small kitchen,it serves as a small reception center after performances. It may also be used as a dressing room by large troupes (if properly planned) as well as an additional meeting room. In addition to the green room, a large lounge suitable for receptions for audiences and casts is highly desirable, although such a lounge may be available nearby in the union building. One of the lobbies might serve such a purpose if properly furnished. Whatever facility is to be used for such receptions,it should be easily serviced by the food department and contain ample preparation and service quarters.

Planning Committee

The various components of the theatre, properly combined, should provide the union with an outstanding educational, recreational and cultural tool. A number of persons on the college campus are candidates for the planning committee. There are, of course, those involved in drama, music, speech, radio, cinema, debate, concert series, dance, lectures and convocations, as well as others concerned with less academic endeavors as student variety shows, campaigns, sings or musicals. Technicians in allied fields such as acoustics, lighting,textiles or sound engineering may prove useful in the planning stages. Beyond a doubt, however, competent assistance from a theatre consultant must be available from the inception of the project. The variety of demands, sensitivity to error, number of persons served,and thousands of dollars involved require the best in advice.

The Integrated Theatre

As the elements of the theatre fuse,they present a unit which exists primarily that large numbers of people might gather together to observe some function. The proper observance of this function entails some vicarious participation by the audience,with the success of the function largely gauged by the degree of participation or identification evidenced. The transfer which takes place between the stage or screen and the audience is due to an illusion,and this illusion is enhanced by the physical facilities. Esthetically, the approaches, the lobbies, the displays, the interiors, should all be pleasing and of a piece. Functionally, the lighting, the scenery, the seating, the atmosphere (air conditioning is almost a must), the coat rooms and other appointments add to the effectiveness of the presentation. The rococo decorations of the past have given away to simple, functional design wherein the entire theatre from lobby to stage is considered as an entity.

Expansibility -- Unlike most of the other union facilities,the theatre is not expansible in dimensions. The limitations of size of the stage opening and the consequent establishment of sight limit the width of the auditorium for stage productions. The maximum viewing distance for motion pictures -- five times the width of the screen -- and problems of projecting the nonamplified voice limit the length of the hall to produce rather stringent boundaries for this many-purpose structure. Thus, on smaller campuses the union theatre may very nicely hold the entire student body and faculty and even serve as the scene for commencement, also meeting the dramatic, musical, cinematic and other requirements made upon it. However, larger institutions, attempting to provide all-campus seating, probably would succeed only in achieving a satisfactory assembly hall. A solution such as that used at Hunter College where three stage theatres and one large assembly hall were erected to meet all the needs seems an ideal one, although it might well be questioned whether the union building is the logical location for such a plant.

Such definite requirements place decided limits on the possibilities of expanding the theatre. Certainly the stage should be constructed properly in the beginning to permit meaningful performances. If storage or shop space is left out until a future date,it means added labor and transportation problems. Lobbies and ticket offices are necessary for theatres, and future expansion plans would quite likely require their removal for additional seating. Entrance from the side with lobbies and ticket office there permits the continuation of seating in a straight line, although such entrance means approaching a slanting floor with attendant safety and engineering problems. Perhaps the simplest way to provide for expansion is to construct the final shell, leaving out for future installation such refinements as a balcony, elevating pit, light booth, rehearsal room, lounge, green room and completed control board. Problems in acoustics, rehearsals, performance and general use make this a poor substitute for the completed theatre. More can be said, however, for expanding the facilities by adding an experimental theatre which could share such items of the original structure as shops, dressing rooms, green room, storage, rest rooms and make-up room.

Flexibility -- The number of activities listed as possible for the union theatre are evidence of its flexibility. Its full value can be realized only if each of its components is planned to serve to the utmost. Lobbies, foyers, lounges and the green room may serve as added meeting rooms, particularly if they are reasonably easy to reach from the union building proper, and each may serve as a rehearsal room, but such items as lighting, heating, seating, privacy and soundproofing must be considered in the original planning. A large theatre lobby may act as an auxiliary dance hall if it has a terrazzo floor, and a vacant stage might serve for square dancing lessons. The various shops might be planned to double for maintenance work and possibly as hobby shops. The promenades, lobbies and foyers offer possibilities as arts and crafts galleries. The auditorium itself, with its dividing curtains, is flexible enough to provide several seating combinations for varying occasions.

Safety -- Ever since the days of the holocaust in the Iroquois Theatre, communities have carried particularly restrictive theatre safety codes. Many of these are obsolete and yet must be observed by planners. Fire and panic prompts most of these regulations but they range over many other areas. It behooves all concerned in planning a theatre to see that local requirements are observed. The stage must be easily and quickly cut off from the auditorium in case of fire. Considering the scenery, costumes, people and powerful lights which are found backstage, this is a reasonable requirement and one that is usually observed by the installation of an asbestos fire curtain hung with fusible links directly over and behind the proscenium. The projection booth is somewhat similarly equipped so that all parts and doors close automatically in case of fire, although the doors must be able to be opened from the inside at all times. All draperies should be fireproof. All exit lights should be on separate circuits, and emergency battery lamps installed on all stairwells, at exits, the heads of all aisles, and in the lobbies and foyer. Carbon-dioxide extinguishers should be prominent back stage, in the projection and light booths, and wherever else electrical fires might break out. Aisles and steps should be lighted by aisle lights whenever the house lights are extinguished. All carpeting should be securely anchored, and ramps used instead of stairs wherever possible. Full-size, regularly spaced steps should be used wherever risers are necessary to prevent tripping. Heated outside steps and approaches assist in reducing accidents caused by ice and snow in colder climates. Top-quality equipment does much to cut down backstage accidents. Sturdy counterweight systems, well-made traps, properly lighted passages and stairways, and fireproof storage lockers are some of the items which make for stage safety.

Windows have little use in the union theatre. They make the showing of motion pictures during the day difficult, demand expensive draping, afforddrafts when open, no ventilation when closed, and present a maintenance problem. By the same token, a thousand persons gathered in a theatre generate considerable body heat and some means is necessary to provide the comfort their appreciation and enjoyment demands. Forced ventilation offers some help but in all but the coolest climates is not enough. Unions which operate theatres during summer sessions should certainly install air conditioning, front stage and back. All should seriously consider it.

Appearance -- The walls of the auditorium of the theatre are largely invisible during much of the time they are in use, in contradistinction to the walls of meeting rooms or dining spaces, for example. Simple, unobtrusive colors and surfaces, indirectly lighted, provide a restful atmosphere and serve to focus attention on the stage. The lower portions of these walls, as well as those of the lobby and foyer, receive considerable wear from the traffic which brushes against them, and should be able to withstand the dirt and friction to which they are subject. Plastic wall coverings are available which can provide both attractiveness and durability, while lobbies and foyers may well use marble or tile to gain their ends. If exhibits, meetings and similar activities are to be held in these places, they should be considered in the decorative scheme. Parallel walls may create acoustical problems, and any wall surface must be approved by an acoustic engineer.

Subfloors in the auditorium undoubtedly are concrete. The aisles and approaches should be padded and carpeted to eliminate traffic noises and acoustic problems. Sealed concrete can be used between the rows, but asphalt or rubber tiling are quieter and cleaner, while carpeting in these areas also is nearly ideal. The foyer and lounges should be carpeted along with the stairways, while a terrazzo floor with link rubber mats near the entrances proves satisfactory for the hard usage received by the lobby. The stage itself is, of course, wood, and the various shops may be either sealed cement or, preferably, asphalt or vinyl tile. Dressing rooms, make-up, green room and other backstage areas do nicely with asphalt or plastic tile.

Functionality -- The theatre functions as a single unit with no conflicts. Arrivers are able to proceed directly to the entrance, purchase tickets easily, pass through the ticket collection stations quickly, check their cloaks with little delay and go to their seats quietly. This flow proceeds with a minimum of cross traffic and confusion. Noises originating outside the auditorium-stage area do not interfere with the proceedings inside, and the acoustics in the theatre permit sounds to register as intended throughout the hall. It is possible to restrain late-comers from disturbing a prayer or solo and to get them to their seats with a minimum of inconvenience to others. Ushers' stations are strategically placed and easily found. Intermission time finds enough room for the smokers and chatters, and does not result in smoke drifting into the hall. Exits are near all sections to permit prompt emptying of the hall, with separate cloak rooms available to balcony seats to permit persons in these sections to leave without joining the crowds on lower levels. While the audience is being properly handled in the auditorium, action backstage is carried out with no interference from the front of the house. Separate stage entrances, guarded by door men, admit all authorized persons. Moving scenery, changing costumes, meeting cues, changing properties, and the thousands of other details are transacted in efficient fashion.

Maintenance of a union theatre presents a sizable task. Carpeting and upholstery offer considerable cleaning problems, and a built-in vacuum cleaning system for the theatre should be located as judiciously front and backstage as they are elsewhere.

It may well be that a flexible but conventional "picture frame" theatre does not satisfy local theatre needs, principally because of the rather rigid limitations it places on drama. Side spills or auxiliary stages may be wanted in front of and to the side of the proscenium, or a concave stage with contour curtains and curved proscenium may offer the added flexibility desired. It may be that the stage and front auditorium floor are at the same level with removable front seats for more immediate contact with the audience. Wider side stages with wagon scenery may replace the stage house, or revolving stages servicing one or more auditoria may be considered. Perhaps something as radical as the Antioch College plan wherein all seats and the stage are completely mobile to allow all kinds of arrangements should be adopted. Theatre-in-the-round might be indicated. The Wisconsin Union theatre has solved many of its problems with its large 1300 seat theatre and its small laboratory Play Circle with 168 seats. Williams College has an additional rehearsal and planning stage used primarily for teaching. Whatever plan is adopted it should certainly meet all the union's needs unless the committee deliberately decides to emphasize one aspect such as theatre, music or mass seating to the detriment of the others. Thus, a speaker in a theatre-in-the-round cannot possibly face all the members of a capacity crowd, and side seats in a wide auditorium are nearly useless as cinema seating. The absence of an orchestra pit may create better dramatic atmosphere but makes musical productions difficult.

ARTS AND CRAFTS SHOPS

Crafts and hobbies are included as a part of the Core-Activity Program. With the current "do-it-yourself" movement so popular in the United States, the significance of the educational and recreational contribution which the union can make in this area becomes increasingly more meaningful. Nevertheless, a planning committee must be prepared to meet objections to the inclusion of such areas. There is quite likely to be a general apathy towards the inclusion of things artistic in what will probably be considered primarily as a student recreation center, particularly on the part of the students themselves. The relatively limited interest in arts and crafts may cause the planners to overlook the quality of the contribution which such shops can make. Where choices are dictated by financial limits, the arts and crafts center may suffer.

With these thoughts in mind, the committee should be well aware of the implications of an arts and crafts center in terms of self-expression, art experience, future useful skills and present recreation.

The variety of offerings which the union's shops can provide is large. Some of these offerings, such as photography, demand specialized facilities and equipment; others, such as leather work or jewelry making, require little and can be accommodated in a general shop area. The tools of some crafts may be used in common with other parts of the union's activities, so that the scene, maintenance and woodworking shops may use the same power tools and central materials sources, and the camera club and campus publications the same studios. The size of the union and the university, the organizational scheme and expected use of the various shops would determine the possibility of such a combination. Among the arts and crafts activities which a union might embrace are:

Painting
Sketching
Block Printing
Poster Making
Silk Screening
Clay Modeling
Weaving
Rug Making
Drawing
Fly Tying
Plastic Work
General Woodworking
Picture Framing
Cabinet Making
Metal and Jewelry Work
Ceramics
Drafting
Photography
Leatherwork
Graphic Arts
Sewing
Knitting

While adherents of nearly each art or craft could develop a list of reasons why their favorite activity should be allocated separate space and equipment, much of it with special requirements such as north light for sketching or humidity control for clay modeling, enough compromises and combinations can be effected to provide a variety of activities within a reasonable area.

Many of the arts and crafts require common facilities. Office, storage and issuing space is needed for all. Lockers, pigeon holes or other individual storage space for work in progress, for personal tools, aprons or materials can serve all areas. A central all-purpose studio, if properly equipped, can be used for drafting and designing, discussions, reading in the field of interest, display of finished products or posting of notices, while housing some of the quieter, more sedentary work such as sketching, painting, drawing or knitting. These common facilities serve well as the central core of the shop, with more specialized areas leading from it. Among the latter could be the photography dark-room area, a power tool shop, a general work shop, a metal shop and a graphic arts shop. (The latter two might well be included in the general shop.) According to this plan the functions of the shop area would be divided somewhat as follows:

Central Studio-Lounge

- Painting
- Sketching
- Knitting
- Drawing
- Sewing
- Entrance lobby
- Display area
- Bulletin Board
- Photography Studio

Metal Shop

- Jewelry Making
- Metal Craft

Power Tool Shop

- Service to other shops

Photography Shop

- Developing
- Printing
- Finishing

Office

- Record keeping
- Supervision
- Instruction

General Shop

- Clay Modeling
- Ceramics
- Weaving
- Rug Making
- Fly Tying
- Leather Work
- Plastic Work
- Woodworking

Graphic Arts Shop

- Block Printing
- Silk Screen
- Poster Making
- Letter Press
- Embossing
- Etching

Storage

- Central
- Individual
- Work in progress

Issue Room

- Daily storage
- Sales
- Supervision
- Instruction

The foregoing by no means represents the only or necessarily the best distribution of functions. Some unions may wish to have separate painting and sketching studios, others a separate photographic studio, others a woodworking shop complete with its own power tools. On campuses such as the University of New Hampshire, where rather complete workshops are operated elsewhere for out-of-class use, the union may merely supplement existing facilities. Small unions may not feel able to build or support anything more than a poster shop or dark room. Distributing the facilities as outlined does permit flexibility of use, ease of supervision, social exchange and circulation of ideas.

Office-Issue Room

As in other areas where supervision of equipment and participants is desired, a glassed-in, central, office-issue space, strategically placed, permits economy and efficiency of operation and therefore may permit longer operating hours while working savings in material and improving the educational value of the whole endeavor. It can look into all the shops except, of course, the dark room, and can be close to the power tools in the interests of safety. Its central location makes it simple for all shops to withdraw tools or materials from the issue room. It may or may not be next to the general storeroom, but it should contain enough storage facilities to eliminate recurring trips to that space. If all hand tools and supplies are to be distributed from the issue room, it must contain space for them. A system of equipping each bench with the necessary tools reduces this space proportionately. An issue counter or window should be as accessible as possible to all areas. A balance, small safe and cash register are needed, and the office should be equipped as others in the union building. A two-way intercommunication system with the master in the office and stations in each shop aids in supervision and instruction. The size of the issue room depends directly upon the size and variety of shops as well as the system of distributing tools and materials. A first-aid kit and, perhaps, a cot should be available in the office for injuries.

Storeroom

The storeroom proper, serving as a reserve from which daily needs are fulfilled, should be easily reached for deliveries. While most of the articles which are kept here are small, stock for woodworking presents problems if it must be transported up narrow stairs or through other rooms. Finished items, some of which may be large, must be removed. Location near a freight elevator or service entrance is desirable. Since special trips must be made to the storeroom during the day, it should not be far removed from the issue room. Should it adjoin this area, the issue room need be little more than a counter or window opening from it. However, should such an arrangement reduce the number of rooms which can be supervised from the central office, it is advisable to locate it elsewhere than in this strategic central space.

Among the items to be stocked in the storeroom are verying lengths, widths and kinds of wood, different kinds of modeling and casting clay, ceramic glazes, varnishes, lacquers, shellac, oil and water paints, canvases, precious metals, leather dyes, laces, threads, eyelets, hides and leathers, turpentine, benzine, acids, oils and other chemicals, paper, inks, abrasives, cements and glues, brushes, rags, film, plastics, type, wire, line, textiles, yarns, rug frames, linoleum, plaster of Paris, smocks and aprons, spare and unusual tools and parts. Shelves, drawers, hooks, bins, cans, bottles and racks are needed to store all these items, and all require means of easy identification. Room for expansion must be provided as usable scrap accumulates and the use of the shop area increases. Room and tools for cutting materials like timber or plastic, and balances for weighing metals or clay, should be provided. A small safe for precious metals is needed here or in the issue room.

In addition to the general and issue storage, some space must be available for partly finished work. Because the variety of projects being made at any time may range from earrings to a television cabinet or a table, their storage out of the way of other workers must be anticipated. Small lockers for private use and small projects; bins, shelves and racks for larger ones; floor space for unwieldy objects; and sliding shelf cabinets for flat work, such as mounted photographs or paintings, may be centralized near the storage room or located in each area. Large pieces in the woodwork shop are more easily left there than carted back and forth, while jewelry, metalcraft and similar products can more easily be placed in lockers. Special storage in the form of damp boxes for ceramics, chases for standing type and drying shelves for the graphic arts are handiest near the work areas with which they are associated. Safe storage for refuse should be provided. Oily rags, sawdust, greasy paper and other waste products present fire hazards. Special metal containers, well labelled, should be available for such materials. Removal of rubbish should be considered along with deliveries to the shop area when locating it.

Central Studio

The central studio, to be in actuality a multipurpose room, requires a variety of furnishings and equipment. Some lounge furniture, with low tables and book shelves for reading materials, permits users to acquire more information about their hobbies or interest in new ones. This same furniture may be used for an informal discussion or instruction group, or for a meeting. Knitters, sewers or sketchers may occupy it. While sturdy and comfortable, it should be light enough to permit moving it about to different locations within the room, although it probably is best located in one end of the studio, where it serves as one of several work centers but from which it may be removed to serve other centers.

Adjustable drafting tables and stools should stand together, perhaps adjacent to flat filing cabinets, for those who are designing their own projects. Drawing boards for the sketchers, and folding easels, canvases, running water, tabourets and storage space for the painters should be available. Stools for seating, modeling stands, and space for models and still lifes are necessary. The latter space may be set aside with various lighting possibilities to serve as a studio for artists as well as photographers. Such an arrangement, while calling for more control in scheduling, eliminates the need for a separate darkroom studio. An unobstructed space about 25 by 22 feet accommodates both. The photographic demands of the college yearbook for sittings in this studio may seriously affect its utility for other purposes, and so if the yearbook does not have its own studio, its needs might well be included here by enlarging the studio space. A tracing box is most useful to all shops and should be located in the drafting center.

While simple sewing tasks may be completed in the lounge area, college women need equipment and space large enough for the creation of dresses and gowns. Some unions may find it feasible to combine the sewing area with the dramatic costume shop, although their differences in purpose make the administration of such a shop questionable. The sewing area needs straight back chairs, sewing machines, cutting and sewing tables, ironing boards and irons, and storage for work in progress. It is quite possible for the sewing area to be included in the general shop where the same work benches may be used for sewing, rug making, leatherwork and similar activities.

If part of the central studio is used as an entrance and lobby, enough area should be provided for display. Model stands, pegboard and tackboard, mannequins and cases should have room here so that a constant display of work produced serves as a stimulus to all who see it. Additional display space should line the walls of the studio and, perhaps, be contained in the corridor approaches to it. Flexible lighting for these display areas should be included in the original planning. Bulletin boards should be included in this lobby space, as well as in each shop area and by the issue room.

Yarn, needles, fabrics, threads, patterns, scissors, paper, illustration, mat, bristol and mounting board, gum erasers, charcoal, canvas and canvas tools, palettes, palette knives, painting knives, oil and water colors, varnishes, solvents, shellacs, drawing board and instruments, sponges, brushes, sketch boxes, smocks, brush washers, water cups, fixative, pastel and blackboard chalk, sandpaper pads, rubber cement, mounting tissue, glass and paper cutters, masking tape, thumb tacks, rulers, drawing instruments, T-squares and boards are among the tools and materials used in this studio that require storage and distribution.

General Shop

The general shop is the scene of a variety of activities which involve very little in the way of large equipment. Work benches 35 inches high with adjustable stools for sedentary work permit multiple use. The benches may be for individuals (about 4 feet by 2 feet) or may be larger to accommodate more than one person with approximately the same table space allocated to each person. Single benches permit more circulation, enhancing somewhat the flexibility of this multipurpose area but reducing the actual working space. Main aisles should be at least 4 feet wide, feeder aisles at least 2.

The kind of bench to be used depends upon the method of operation to be followed. If all tools are to be issued from the issue room, a standard tote box containing the basic tools of the various arts and crafts may be devised. This box, designed to fit into slides under each bench, can be stored in a cabinet along with other boxes, some of which may contain clay modeling equipment, others leather-working tools, still others clamps, scissors, needles and other accessories for rug making. Other areas, as the metal, graphic arts or the central studio may be served by similar tote boxes, thus making it necessary to issue only the larger tools as saws on an individual basis. To completely control the disappearance of tools by a method requires some means of inspection upon the return of the tote boxes, and this inspection may destroy some of the informal, relaxed atmosphere desired. Assignment of an inventoried tote box to each student for the duration of his project eliminates this repeated inspection, but demands a great deal more equipment. The possibility of storing hand tools in racks at each bench might well be considered. The tool handling method is important in that it determines the amount of space for tool storage, whether it be at each bench or in a kit or tote box centrally located. It is certain, at any rate, that tools being used must be kept in some sort of order. In addition, if tool racks are to be provided at each bench, then these racks must be designed for the tools they are to hold, a difficult proposition in a multipurpose operation, as there are relatively few tools which are common to all the arts and crafts pursued in the general shop.

Each bench should be sturdy. While floor mounting reduces the flexibility of the room, it increases the stability of the benches and makes air, electrical and gas connections possible wherever desired. Hardwood edge-grain tops which can be replaced make fine work surfaces, and a vise at each bench permits a variety of work at any location. Electric and gas outlets at each bench greatly increase the flexibility and utility of the shop.

Work centers develop naturally, as the kilns determine the heart of the ceramics work, the power tools the location of the woodworking section, the looms the place for weaving, and the hood the metal center. However, one large layout with benches in the center and specialized equipment -- power tools, kilns, looms, hood, air lines, potters wheel -- on the periphery or nearby, permits expansion and contraction of the various work centers in accordance with interests. This arrangement also permits the use of the whole shop for a specific purpose, such as woodworking night or rug-making day for a women's summer convention.

Equipping the new general shop, as well as the others, presents some questions concerning interests, since no one wishes to invest in tools which are never used. In this respect, Verral points out that in the program at Minnesota's Coffman Union, which embraces woodworking, metalsmithing, weaving, leatherworking, ceramics, graphic arts, and photography,

> experience has proved that basic handtools, of professional quality, should be purchased at the beginning. Then a program of major purchases of power

tools should be laid down. As amount of basic equipment has expanded, the more frothy ornamental crafts have disappeared. This fact indicates the really fundamental character of college students' manual arts needs. The more trivial crafts had a natural demise. An example is the discontinuance of picture frame mouldings. Many pictures are framed at the shop, but the students now start with raw lumber. Thus they are brought face to face with a significant design problem.[1]

Basic equipment for the various activities to be carried on in the general shop vary with those drawing up the requirements, but the following lists suggest articles which are necessary or desirable to the different work centers:

Ceramics -- (for groups of about 20 persons)

2 electric muffle kilns, side or top loading, well ventilated; one with a
  firing chamber 8" x 8" x 11", the other 17" x 17" x 15"
2 kiln tables to hold kilns so that loading opening is about 30" high
1 storage shelf by kilns for kiln furniture
2 storage shelves by kiln for fired and unfired pieces
1 storage shelf by kiln for glazes, pyrometric cones, etc.
Several storage shelves or cabinets for molds, slip, wire, sponges, etc.
1 potter's wheel
1 electric grinder and buffer (may be near metal shop)
6 damp boxes (plastic bags may be substituted) for unfinished work
2 dozen modeling tools
1 or 2 wedging boards
1 balance
1 jiggering machine
1 spray gun
1 mortar and pestle
1 ball mill

Supplies which are needed include: pyrometric cones, self-glazing engobes, lead glazes, and different colored underglazes, plaster of Paris, kaolin, slip, marble slab, molds, armature wire, elephant ear sponges, bisque tiles and plates, scrapers, glaze brushes, wash pans, pliers and large galvanized cans,with one hundred pounds each of red clay, terra cotta clay, modeling clay and casting clay.

A sink with running hot and cold water is needed in or near the ceramics work center, and chalkboard should be available, along with a tack board.

Leatherwork -- (for individual kits)

Awls (saddlers, harness, shoemaker's, curved, thong)
Number 12 liner thread
Cutting block
Design sheets
Dividers
Draw gauge
Saddle soap

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[1] Frank Verral, "Arts and Crafts for Recreation at a State University," Recreation, XLV (March, 1952), p. 570.

Edge beveler and creaser
Knives (skiving, thong, rocker, extension, blade)
Punch
Hardwood mallet
Marlin spike
Modelers (tracer, creaser, deerfoot, spoon)
Needles (glovers, harness, blunt, leather lacing)
Oilstone
Tooling and strap leather patterns
Belt and drive punches (number 1, 2, 6, 8)
Punching block
Shears
Skiving surface (marble, glass, etc.)
Snap fastener tools
Stamping tools
Stitching wheels
One- and three-prong thong chisel
Thong cutter
Wooden creaser

Additional equipment might include eyelet spreaders, fids, metal squares and rulers, stipplers, sponges, vises, hand clamps, camel's hair brushes, files, hacksaws, drills and brass rod. Materials and supplies used include various leathers such as cowhide, lambskin, pigskin, goatskin, sheepskin, steerhide, tooling leathers and their scraps, beads, rivets, eyelets, key frames, buckles, snap fasteners and sets, leather and rubber cement, glue, colored india ink, lacing, leather dyes and enamels, modeling sheets, polishing wax and saddle soap, screw posts, zippers, turpentine and benzine. Hot and cold running water and a sink help leatherworkers in their craft,and such decorative items as gold leaf or powder should be stocked. A marble slab on a sturdy table offers a smooth, cool, firm surface which is excellent for leather tooling and which tends to keep the leather moist.

Fly Making -- There are many simple crafts such as knot tying and chip carving which neither require or warrant special mention, as they can be done in or out of the shop with little in the way of special equipment. However, as fly casting is sometimes taught in physical education courses and because it is such a popular sport, the art of making flies is given special mention here. Its requirements are simple: fly making vise, hackle pliers, dubbing stick, gut, quills, feathers, fur, yarn, tinsel, hackle, dubbing wax, lacquer, shears, wooden applicators, plastic guide.

Rug Making -- Hooking tools, various sized easel frames, as well as C-clamps for making temporary frames, a supply of carpet binding and burlap, filler materials such as wool or silk rags, or waste yarn, scissors, whisk brooms and thumb tacks are all hooked rug makers need in addition to the standard benches and stools, some dyes and some transfer paper. Braided rugs require even less equipment since a C-clamp, large darning needle, hand sewing equipment, scissors, strong thread, some wool rags and some dyes permit the start of braiding.

Plastics -- Recent developments in the areas of synthetic resins or plastics have resulted in a relatively new craft. These plastics may be worked in either their solid or liquid state. A stock of phenolic resin in tubes, sheets and rods of various colors, as well as some in liquid polyester plastic, plus such normal tools as hand or power saws, abrasive wheels (near a continuous water supply), sanding discs, hand files and grinders, buffers, electric drills and lathes, sand and garnet paper, a hooded muslin wheel, taps and dies, carborundum stones, calipers, try squares, dividers, punches, awls, plastic cement, denatured alcohol, a few molds for liquid resins and a hot plate serve those interested in this hobby. Most of the tools used in working plastic are common to metal or woodworking, and so this work center might well be placed near them. In addition to the various kinds of plastic which require storage, there are hydrochloric acid, plastic cement, alcohol, liquid latex, plaster of Paris, lacquers and thinner, banana oil, turpentine and acetone.

Woodworking -- Making things of wood, a time-honored, still popular pursuit, both by its nature and its wide appeal, is likely to require more space than the other arts and crafts. Most of the power tools are used largely on wood, and much of the storage and work area is similarly devoted. A list of basic hand tools for an informally organized shop follows:

4 jack planes
1 fore plane
2 block planes
1 router plane
2 10 pt. crosscut saws
2 8 pt. crosscut saws
2 5-1/2 pt. ripsaws
2 backsaws
1 nest of keyhole saws
2 coping saws
1 mitre box
1 set of assorted chisels (1/8" to 2")
1 set of assorted gouges (1/4" to 2", both inside and outside ground)
2 sets of assorted screw drivers (3", 4", 6", 8", 10") with assorted bits
2 cabinet scrapers
1 oilstone
1 slip stone
4 8" try squares
1 steel try square
1 12" combination square
2 spokeshaves
1 set steel figures and letters
1 saw set
24" bench rules (one for each)
2 assorted nail sets
2 dogwood mallets
1 24" level
2 putty knives
4 sloyd knives
1 set steel spindle hand screws
1 set of 3 pairs of bar clamps (24", 35", 60")
1 set of 3 pairs of carriage clamps (3", 16", 18")
1 set 2-1/2' junior clamp
1 glass cutter
1 set of 4 turning chisels (1/4", 1/2", 1", 1-1/2")
1 set of 3 round point turning chisels (1/4", 1/2", 1")
1 set of 3 turning gouges (1/4", 1/2", 1")
1 1/2" parting tool
1 steel oiler
1 brad awl
2 sets of auger bits

1 set of 5 machine bits (1/4", 3/8", 1/2", 5/8", 3/4")
1 set of bit stock wood drills
1 expansion bit
1 1/4" dowel bit
1 3/8" dowel bit
1 dowel pointer
1 dowel jig
2 hand drills
2 carbon drill sets
4 bench dusters
2 bit gauges
1 8" T bevel
2 10" bit braces
1 6" outside calipers
1 6" inside calipers
1 6" spring calipers
1 6" spring divider
2 10" half-round cabinet wood files
2 10" flat wood files
2 6" slim taper file
1 7" auger bit file
1 file card and brush
1 mortise gauge
3 marking gauges
1 washer cutter
1 10" monkey wrench
3 16 oz. claw hammers
2 13 oz. claw hammers
3 spring clamps
1 electric glue pot
1 dowel sharpener
2 mitre vises
1 soft face hammer
1 ball pein endhammer
1 offset pein end hammer
1 cross pein end hammer
1 magnetic tack hammer
1 magnetic upholsterer's hammer
1 trimmer's hammer
1 blacksmith's tongs - 18" jaw

Classes organized on a formal basis require more pieces of basic equipment.

If individual kits are to be made available for each bench or student,they should contain the bare necessities which can be augmented from the general tool supply. Such individual kits might include:

1 14" tenor saw
1 8" dovetail saw
1 large trying plane
1 small trying plane
2 mortise chisels (1/4" x 3/8")
5 firmer chisels (1", 3/4", 3/8", 1/4", 1/2")
1 marking gauge
1 claw hammer
1 striking knife
1 large jack plane
1 small jack plane
1 smoothing plane
1 rasp and file
1 mortise gauge

1 cutting gauge
1 6" divider
1 12" rule
1 mallet
1 6" try square
1 bevel
1 screwdriver

Lumber may be economically purchased and stored in ten-foot lengths with cutting facilities available in the store room. Storage of scrap and outsize lumber is also necessary, and a variety of supplies, such as abrasive papers, glue, oil, shellac, alcohol, turpentine, linseed oil, varnish, thinner, paint, brushes, wax, paint remover, lacquer, pencils, nails, screws, tacks, brads, rules, putty and wood filler, must be kept on hand and be easily located. Fireproof storage for inflammables must be provided, and spare tool parts such as drills, bits, blades and handles must be available.

Work areas in addition to work benches are needed. Space for sawhorses, a zinc-topped oilstone table, a sink and work tables for the glue pot and mitre box or any other fixed tools, are among the necessary areas. A finishing center where painted or varnished pieces may be treated and dried is required. Woodworking, along with metal work, is a noisy activity, hence these two crafts may well be separated into their own room so that such relatively quiet pursuits as modeling, weaving and fly tying are protected from the noisy sections. Such an arrangement reduces the flexibility of the general shop, however.

Weaving -- While finger weaving as practiced by such groups as the Navaho Indians may permit of a greater variety of design, shuttle looms are needed to meet the demands of those who wish to complete their fabrics more rapidly and easily. Nevertheless, the manufacture of finger looms in the woodworking shop and subsequent use in the weaving center serve as a fine introduction to the craft field. A few simple portable looms of varying sizes may be kept for this purpose and used either on the benches or on the floor of the central studio or elsewhere.

For shuttle or plain weaving, small portable hand looms may be made or purchased. Larger, two-harness table and floor looms which are to be used for more complicated projects should probably be acquired commercially. One or more multiharness, large (up to fifty-four inches) floor looms with foot treadles are of value to the advanced weaver. Since each project requires the use of a loom until it is completed, small looms for such items as scarves or runners serve more people than one or two larger looms, hence both sizes should be available.

In addition to the looms, working frames for wall and table use are needed, along with spool frames, shuttles, leash sticks, threading hooks, shed sticks, crochet hooks, knitting needles, strips of rags, scissors and storage for yarn, hoods, needles and threadling drafts.

Metal Shop

Unless heavy forge work is involved, the metal shop can be another work center in the general shop. Its benches should be near, or equipped with, a gas supply and a well-ventilated hood. Such a hood, equipped with an electric grinder and gas and located near the woodworking and plastic centers, can serve all three. A large shop may need two such grinders with only that in the metal shop under a hood. A double sink with hot and cold running water, plus an acid sink and an etching sink under the hood provide adequate auxiliary work and safety facilities.

Complete metal work kits may be purchased which, when complemented with other tools, provide a well-equipped metal shop. Such complementary tools include flat saws, long nose chain and flat pliers, bending and forming pliers, twist drills, a twist drill gauge, metal shears, bench vises, tinner's shears, escapement, needle, flat, half round and round metal files and rasps. A guillotine cutter, steel try squares and straight edges, drawing boards, beating blocks and anvils are also needed. Individual tool kits should include such abrasives as Tripoli and crocus on buckskin, and pumice stone, antiquing brush, anvil block, asbestos sheet, burnisher, crucible, twist drill, assorted flat, half round and needle files, ball pein hammer, jeweler's saw, lead sheet (2" x 4"), wood mallet, flat, round, cutting and gas pliers, pitch bowl, ring mandrel, metal snips, sand bag, soldering tool, stamping tools, soldering and crucible tongs and tweezers.

Materials which must be kept on hand include nitric and sulphuric acids, antiquing fluid, borax flux, enameling powders, binding wire, assorted findings, jeweler's solder, various gauges of silver, copper, bronze or aluminum, plus, if possible, pewter. A medium-sized bench furnace should be available.

Power Tool Shop

While there may be some educational and artistic value in using hand tools exclusively, the speed and accuracy of power tools and their tremendous popularity in domestic work shops, along with the limited time often available to students, make it desirable from both a learning and a production standpoint that such tools be included in the union's shop. Five basic machines and their accessories will permit the fulfillment of nearly any woodworking operation. These machines are a circular saw, a jointer, a lathe, a drill, and a jig or band saw. In addition to the foregoing, the union shop needs a planer and a grinder (although the latter might be under the hood near the metal work center) and, largely for production purposes, perhaps a radial saw, a shaper, a sander, a hacksaw and a metal turning lathe. All the equipment should be heavy duty to withstand long weeks of use and possible abuse by novices. Verral's warning about adding power tools after the basic hand tools have been purchased should be recalled. However, space is needed for all such tools,and heavy-duty wiring should be installed. If such portable electric tools as drills or sanders are available, they require storage space, probably in the issue room.

The circular saw should have a one horsepower motor, tilting arbor, 10-inch blade (carbide-tipped), miter gauge, saw guard, table extension,and molding bead and dado inserts. The band saw, with a one horsepower motor and tilting table, should be equipped with a converter for use on metals as well as wood. The jig saw requires a half horsepower motor, and should have a tilting table and at least a 24-inch capacity. The jointer should be equipped with a one horsepower motor, a depth gauge, tilting fence and a guard, and should have at least a 6-inch capacity. The planer, also with a 6-inch capacity, should have at least a one horsepower motor and a bolt guard. The lathe needs a one-third horsepower motor, with a 4-step pulley, a 9-inch swing and a 5-foot bed. The drill press requires a half horsepower motor, variable speed control, a 15-inch diameter capacity and 4-inch spindle travel. All of the foregoing should be mounted securely on bases or pedestals and attached to the floor wherever the lack of weight warrants it. Covers for equipment not in use protect motors and controls from dust and sawdust. If they are furnished, space for their storage when the equipment is in use should be supplied.

The grinder, if mounted under the ventilated hood, can be an all-purpose machine, particularly if a stream of water may be played over one of the wheels while working plastic. An additional grinder may prove worthwhile in the power tool shop for general use. Each should have two 7-inch by 1-inch wheels with wheel guards and lighted eye shields, one-third horsepower motors,and be securely mounted on a pedestal or under the hood.

The accessories which accompany the tools often prove useful, although many merely duplicate the work of other pieces of equipment. The grinder must have a variety of sanding plates and discs, buffing and polishing wheels and brushes; the drill press, a set of cutters; the lathe and saws, extra blades.

The available safety features of the various power tools should be incorporated with them. Guards for blades and belts, positive, well-marked and located controls, and sturdy tool rests should be taken for granted. All power tools should be surrounded with plenty of work space and away from traffic lanes. A color conditioning (such as that developed by the DuPont Laboratories) scheme should be used. Aisles around the power tools should be away from the working sides. The circular saw needs up to 10 feet all around it to permit both the cutting and ripping of long boards. At least 6 feet of working space should be allowed in front of and on either side of the band saw and the shaper, and 3 feet allotted around the drill press. The jointer should be 3 feet from the wall, and a disc sander requires 4 feet clearance in the direction of its throw. Grinders should be away from the finishing and polishing operations.

Photography Shop

Photography, in addition to a place for taking pictures, requires room for mixing chemicals, for printing, for finishing and for developing. The space for reading and meetings is furnished by the central studio and may be the space for picture taking, but the rest of the processes are specialized enough to require area which lends itself poorly to other use. The space which these areas demand is commonly combined in the so-called darkroom, even though an absence of light is demanded only in the developing and printing stages.

While most of the film processed in the union's shop has been exposed elsewhere, there is enough demand for portraits, still lifes and experimental work inside for the studio to require a variety of lighting arrangements. Light bars and tripods for reflector type bulbs, booms and large floor reflectors for flood bulbs and clamp-on sockets, plus sufficient wiring, are indicated. The studio should be well ventilated to dissipate the heat. About 22 by 25 feet of space proves sufficient in most instances.

The chemical mixing room need be only a small one (about 6 feet square) with a work table, acid-resistant sink and storage space available. If next to the developing and printing rooms, pass-through windows (lightproof) ease transfer of materials. Among the chemicals to be used here are sodium carbonate, sodium sulfite, Elon, developing powder, Hydroquinine, acetic acid, potassium alum, potassium bromide and hypo.

The darkroom itself should be protected by light traps, either labyrinthine or double doors. The former requires no door opening, the latter less space.

> Regardless of the type of photography for which they are used, all darkrooms have somewhat the same layout and equipment within their walls. Processing of photographic materials requires the steps of development, stopping, fixing, and washing... The general physical requirements of a satisfactory darkroom are as follows:
>
> 1. The room must be light-tight.
> 2. Both "safe" and white-light illumination must be provided.
> 3. Trays or tanks must be available for holding processing solutions.
> 4. Running hot and cold water is needed.
> 5. An accurate thermometer and timer or clock are necessary.

6. A bench-top or wall viewing light should be available.
7. Storage space of the proper type is necessary for photographic materials and supplementary equipment.
8. A drying rack or cabinet will be found useful.[1]

The sink should be acid resistant and equipped with an automatic mixing faucet. It should be large enough to contain three large trays (at least 24" x 18" x 37"),and set into a long table or drain board under which is a tray rack and cabinets for other storage. This table might well run the length of the room with shelving over it and a viewing box on it next to the sink. Other work benches in the room with storage under them are useful,and one should hold a paper trimmer. All should be constructed with curbs at the rear to prevent spillage. Air conditioning of the developing room is quite essential to proper processing as well as the comfort of those working in such an enclosed space. Stainless steel benches, tables, and sinks are ideal,and a temperature developing tank the final word. Eight feet by 10 suffices for a developing room.

The busiest part of the photography shop is apt to be the printing room. Here enlargers of various sizes, contact printers, a print washer and a sink are required. Entrance must be through a light trap,and overhead safelights should be near each work station. Paper shelves large enough for printing paper up to 11 by 14 inches in size should be handy to all enlargers and printers. A printing room serving up to 15 persons should be about 15 feet by 20 feet and contain a variety of enlargers (one 4" x 5", one 2-1/4" x 2-1/4", two 2-1/4" x 3-1/4", two 8" x 10" and two 35 mm.), as well as two contact printers, two sinks (one with pipes and shelf overhead) and a drum print washer. A work bench runs down either side of the room,and each holds the smaller enlargers and the contact printers. At the end of each,an 8 by 10 inch enlarger is located on its own mounting. Parallel to and between the work benches is a work table with space for trays, bottles and wastebaskets underneath it. A sink is set in one end of this table, the print washer in the other. With this arrangement,workers may turn from their enlargers to the work table and back and still have room for moving about. The finishing room requires work tables, a sink with drain board, drying shelves, a ferrotype wringer, a print dryer, spotting easel, dry mount press and a paper trimmer.

Graphic Arts

The graphic arts shop is more likely to be devoted to the duplication of the same pieces of art rather than the creation of just one item. For example, a student working on a linoleum cut may use it to produce a hundred Christmas cards all alike,while in the woodworking shop he makes only one picture frame for a certain canvas or print. Much of the equipment of the graphic arts shop consists of presses of various kinds, such as the screw or hand press for block printing, etcher's press, silk screen frame, job press for letterpress work and an embossing press. Since poster making is a natural function of this shop,some of the equipment which lends itself to this use -- silk screen, letterpress, embossing -- should be large enough to produce at least standard size (14" x 22") posters.

Most of the original art work probably is produced in the central studio so drawing tables, boards and similar equipment need not be located in the graphics shop. Because the work done in the graphic arts shop embraces both sitting and standing, benches or tables should be both 30 and 35 inches high.

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[1] Darkroom Construction for Professional, Photomechanical and Industrial Use. Eastman Kodak Co., 1st ed., 1951, pp. 1, 2.

Sets of knives, veiners, gravers, gouges, chisels and similar tools for both wood engraving and linoleum block printing may be purchased inexpensively. One or two small hand screw or lever presses, some ink brayers, tinner's snips, some bench hooks, oilstones, a color registering jig, and such materials as cement and plywood for mounting blocks, printer's inks, paper, and end-grain apple or pear wood blocks and thick battleship linoleum should keep the block printers busy. Properly mounted blocks may be printed on the platen press.

Both fabrics and paper may be printed by the silk screen process, and various size frames may be desired to meet the differing needs. One or two frames (17" x 22") for standard-sized posters may be used for other projects as well. Here again the requirements are simple and may be obtained commercially at relatively little expense. The frames, squeegees and knives, plus such supplies as various mesh screening fabrics, inks, sizing, shellac, gummed tape, asphaltum, stencil film, lacquer thinner, turpentine, tusche, varnish brushes, rags, alcohol and poster board, meet normal demands.

A small job press with foot power permits the printing of tickets, flyers, letterheads and similar pieces by letterpress. It may serve organizations more than individuals, and its place in the arts and crafts shop might be questioned on the basis that it serves as production rather than hobby equipment. Since printing does serve as a leisure activity for many persons, its practical applications need not necessarily militate against its inclusion in the union shop. It does represent more of an expense than some of the other graphic arts, since the press and type are rather costly. In addition to a small (about 7" x 11") platen press and several fonts of type in their cases, an ink stand, a case stand, ink rollers and knives, composing stick, chases, imposing stone, planer, mallet and quoin key, such supplies as inks, tympan paper, assorted fine papers, type furniture and quoins are needed.

A simple hand poster or proof press with wooden letters can be used for making posters, and represents a simple but effective reproduction facility for the poster shop. Many unions use a commercial embossing press which utilizes bronze type, heavy cardboard and an adhesive topping paper. This process furnishes attractive, multi-colored signs and posters, but is expensive in both initial equipment and in production. The press must be mounted to a work bench, and room for type, cardboard and topping paper storage provided. If a poster shop is maintained separately from the graphic arts shop and is used only by trained persons (union committee members, for example) it might include more elaborate versions of the silk screen, embossing and letter press equipment. Air brush equipment is most useful in such a shop.

Etching sets, including gravers, burnishers, etching needles, dry point and other needed tools, are available commercially. These, with an etcher's press and blankets, some copper and zinc plates, etching ground, nitric and acetic acids, carborundum powder, silver polish, etching trays, stopping out varnish, etching inks, benzine, plate oil, some hand vises, tinner's snips, wax tapers, asphaltum, feathers, glass lifters, blotters, ink daubers, brushes and abrasives, equip the etchers. The etching work center should be near the metal shop since much of the facilities and materials are used in common. Gas lines for heating the plates are necessary, and an acid-resistant sink is desirable, if the metal shop is not nearby. Lithographic stones and plates, carborundum powder, sluicing pans, litho pencils and crayons, drawing bridges, gum arabic, nitric acid, asphaltum, etch brush, litho inks, turpentine, sponges, sterile rags, ink brayers and oil equip the lithographic work center. If zinc or aluminum plates are used, the etcher's press can serve for printing. A sink is needed for the lithographers.

Circulating art libraries exist on many campuses in an attempt to bring students into everyday contact with works of art. The contents of such libraries may range from large, framed originals to simple, matted reproductions. Such loans may be made by libraries, by art departments or by unions. At the Wisconsin Union, where the two art galleries attest to the popularity of art, hundreds of originals are in circulation in what amounts to a university-wide course in art appreciation participated in without the prod of academic credit.

If the union is to lend art work, it needs proper storage space, issuing facilities and records. Framing and mounting may be done in the shop area, and issuing may well be carried out there also. Other places, such as the information center or record library, may be used for this latter purpose and may serve to introduce the service to more people or to those who might be more in need of such an introduction than those already using the work shops.

Maintaining the circulating library presents a storage problem. The various art works must be easily selected from the collection, thus requiring simple identification and removal. A pile of framed prints of various sizes makes selection and removal most difficult. Shelves divided into vertical storage compartments, adjustable in both directions to accommodate various sized frames, and tagged with identification tags are indicated. Matted prints may be kept in catalogued portfolios or drawers. The storage area should be adjacent to the issuing area, if possible, to eliminate the repeated trips between each so often necessary before individual selections are completed. A cross-reference file should be available at the issuing center and, if possible, a catalogue of small color prints or transparencies, illustrating the collection, should be there to assist in the selection process. A file recording withdrawals and returns and, if charges are made, a cash register or change box, are needed. Receipt forms may be desired as well as some arrangements for sending out form reminders of return dates or overdue withdrawals. If sculpture or similar objets d'art are loaned, they require shelf or other storage space.

There are other arts and crafts besides those mentioned which a union program might include. Some, such as chip carving, knot tying or model building, may be carried on in the shops already mentioned; others, such as flower arrangement or radio building, may require special equipment and may be housed more satisfactorily elsewhere.

Integration of Shops

The shops complement each other. The painter or photographer can frame his own work, the weaver decorate her own fabric, the clay modeler cast in plastic. The power tools serve all areas, and many of the hand tools and supplies, usable in several areas, may be drawn from a common supply. Plaster of Paris is used in ceramics and in plastics, marble slabs for leather work and ceramics, asphaltum and nitric acid in both etching and metal work, and the various abrasives, such as sand and garnet paper, pumice, carborundum and emery, serve many of the same shops. Hammers, pliers, backsaws, shears, dividers, calipers, oilstones, knives, rulers, try squares, files, brushes, hand vises and pencils are some of the tools used in the various crafts. Turpentine, linseed oil, thinner, paints, varnishes, lacquers, shellacs, oil, alcohol, glues and cements, asphaltum, inks, paper, thread and rags are among the materials which serve more than one shop. Mere proximity to a variety of pursuits offers an opportunity to those participating in one activity to become interested in others. Good facilities and leadership may lead from a passing interest in a simple craft to an abiding appreciation of the arts.

Efficiency and Economy -- Separated by general function, yet near each other and a central office and supply room, the shops offer opportunities for economy and efficiency.

Plumbing, gas, air and electrical lines may be grouped to eliminate costly extensions. Glass walls in all shops and the office permit easy supervision and instruction. The centralization of supplies and tools affords more economical purchasing and usage. All shops should be amply supplied with utility services. Sinks are desirable in all. Each bench should be equipped with electrical and gas lines, and compressed air lines with outlets should enter each shop. The photography studio should be equipped with strip type convenience outlets one foot above wall benches completely around the room. Power tools, large enlargers, print dryers, mount presses and kilns should be fused separately, and their supply lines properly rated. Two hundred and twenty volts may be needed for large kilns and other equipment.

Chalkboards and tackboards should be handy to each work center. Washrooms with industrial handwashing equipment should be in or near the area. Overall lighting with a minimum of thirty foot-candles at working height should be provided. In the general, power tool and metal shops, sealed, close-grained hardwood floors present the nonslip, smooth, continuous surface needed. Asphalt or other tile prove satisfactory in the central studio-lounge, while quarry tile in the photography shop is acid resistant and withstands spillage, particularly if floor drains are installed.

Expansibility -- Expansibility of the shop area is most easily achieved if the area is originally somewhat too large for projected use. This, with the modest beginning suggested by Verral in which only basic tools are installed, and if the natural growth of the activities dictates later acquisitions, permits considerable expansion without major structural changes. If additions are contemplated, they should be permitted to take place without changing the functioning of the office-issue room or necessitating a major overhaul of the utility and service lines. Portable steel partitions with glass permit changing the size of the shops. Extension of the specialized shops into the central studio-lounge, with the removal of the latter to another location, can be accomplished with fewer dislocations than would be necessitated if the metal shop with its hood, or the photography shop with all its sinks and light traps were moved. Also, less supervision and heavy equipment, and fewer materials are, as a rule, involved in the activities of the central studio.

Flexibility -- The flexibility of the shop area would be greatest, of course, if it were merely one large room. Some divisions are necessary because of function, safe storage or noise prevention. The photography developing and printing rooms must be separate from the others for processing reasons. Materials and tools must be husbanded. The noise from the power tools distracts the quiet workers. However, movable partitions in some instances permit fluctuations in size of specialized areas, and a minimum of even these permits greater flexibility of use. Forgetting the noise element, one great shop could embrace the central studio-lounge, the general shop, the metal shop, the graphic arts shop, the power tool shop and even the office. Work centers would be formed around the room, but the various kinds of work to be pursued could ebb and flow around the all-purpose benches in the center. As little departure from this concept as is practical results in a flexible shop area, providing enough space is left for the studio-lounge activities. Movable lounge furniture and portable easels, drafting tables and photolights make multiple use of the latter floor space possible, and display boards and cases throughout the shops increase the flexibility.

Safety -- The materials and by-products of the various shops represent definite fire hazards. Wood, rags, oil and acids in combination with such items as flood lights and gas burners may start conflagrations. Fire extinguishers should be located in each work center. Storage rooms should be fireproof, and the proper receptacles for oily waste, shavings and scraps be provided. Exits should be well marked and serviceable. Nonslip floors are required wherever cutting tools are involved. Drainage should be provided in the darkrooms. Definite work spaces and aisles should be established around each bench, work station and power tool. Specific instructions should be posted at each piece of special equipment, such as power tools or kilns, not only to prevent accidents but also to insure efficient use and eliminate abuse. All safety guards should be installed on the different pieces of equipment, and such items as safety goggles and water sprays should be available. Controls should be clearly marked and positive acting. Power tools, wherever feasible, should require two hands for operation. The weight of the power tools should be considered in the structure of the floor. Shadowless lighting with a minimum of thirty foot-candles of illumination at working level is necessary. All-over lighting permits flexibility while eliminating dangerous shadows. Ventilation or air conditioning of all shops is desirable, with special attention given to the darkrooms and hoods. The noisy shops should be acoustically treated to absorb sound within them and also to prevent transmission from them to other parts of the building.

Appearance -- A clean, restful appearance suits most of the shops, although the central studio-lounge and the office can be treated more elaborately than the others. Glazed tile for the walls can be washed easily, and interior walls, if movable partitions are employed, should be of steel and glass, preferably with a washable finish. Unobtrusive colors with a minimum of glare assist in concentrating attention on the work at hand. Windows should be shielded with venetian blinds which can be easily adjusted and cleaned, and the use of structural glass for glare-free, easily cleaned exterior walls may warrant consideration. The darkrooms may be painted white or a light color, if desired, instead of the old-fashioned dark colors, since white does not affect prints during the absence of light, and lighter colors may make these rooms more enjoyable places in which to work when the lights are on.

Functionality -- Laid out properly, with the proper equipment, tools and materials available, the shops should function very well. Each center is by itself and yet is near the other centers it may service. Work space around each bench, table and work station, in addition to at least two-foot aisles wherever indicated, permits workers to operate undisturbed. Utility and service outlets wherever needed, with additional outlets easily installed as changes dictate, permit a variety of projects to be completed efficiently. Tools and supplies are easily accessible from the central issue room. If the publications darkroom adjoins or shares the union photography shop, and if the maintenance program utilizes the woodworking and power tool facilities, more economies can be effected, although this may be done at the expense of efficiency of all the operations concerned. Such sharing of equipment may be the only way in which smaller unions can afford these facilities. Grouping all the shops together while separating each function provides economical and efficient operation and usage. Central purchasing, storage, supervision and instruction are all possible. Power tools service several shops, and many of the shops may be involved in the completion of a single project. Deliveries and trash removal are simplified, and several noisy areas are gathered together for easier isolation.

Organizational Planning -- The number of hobbyists who are interested in the shops may be quite high on many campuses, and all may be prejudiced in favor of their preferences. The professional people who can be of assistance in planning this area might include members of the art, home economics, metallurgy, physical education, physics and engineering departments, while such service departments as the buildings and grounds or print shop may be able to furnish help. Any number of local interest groups are quite likely to exist and to include members eager and able to assist in extending their particular field. As mentioned earlier, this group may need an especially clear concept of the functions of its area and an ability to express itself to others less understanding.

GAMES

The similarity of purpose, equipment and function of the game areas makes their location in close proximity to each other desirable. All represent the informal kind of recreational activity indulged in more or less spontaneously to fill a free hour or so; each requires equipment which must be issued and returned, sometimes with charges to be collected; and each functions continuously rather than at set times, as in the case of planned programs such as concerts, dances, motion pictures. A point of control, properly manned, for the whole games areas permits proper care of equipment, collection of charges, suppression of gambling, equitable use of facilities, proper behavior, supervision of pin boys and the availability of continuous instruction.

Expansibility

Expansibility of a games area as a whole is not easily achieved. Cards and chess rooms can be moved quite simply to larger quarters. Billiard rooms are rather easily enlarged. However, table tennis facilities, largely because of the liveliness of the ball, require a long, narrow space, and bowling alleys are equally demanding in this dimensional quality. The insertion of a wall for backstopping purposes in a table tennis room permits the doubling up of tables and consequent use of an area more closely approaching a square in dimensions, but bowling alleys require a playing minimum of 78 feet in length, which excludes all seating, lobby and circulation room as well as back pit space. With participant and spectator seating added, approximately 100 feet are needed for each alley, plus additional lobby area, shoe storage, equipment storage and control space. The noise factor usually dictates the placement of bowling alleys in the basement of the union building, which, if the games are kept together, then dictates the location of the whole area there. As table tennis is also a noisy activity, such location is quite acceptable, although with air conditioning and sound-proofing in their present state of efficiency, it is quite possible to locate the noisy games area nearly anywhere without disturbing the rest of the building, providing windows are nonexistent or kept closed and the transmission of sound through structural members is prevented. In this connection it should be pointed out that there is considerable feeling among bowling alley operators that muffling of the sound of falling pins within the alley itself has a depressing psychological effect on bowlers, and results in less usage of the alleys. Whether or not alleys are located in basements, care must be taken to permit sufficient expansion. A large excavated basement area may be allotted for future use, or a wing planned to permit expansion. The availability of over 100 feet of unobstructed space per alley must be considered. If the table tennis area 24 feet wide parallels the length of the bowling alley, it provides minimum space for a table every 12 feet, or roughly 10 tables, which can be converted into 4 additional alleys, should the tennis area be moved elsewhere. Expansion of bowling alleys or a table tennis room is accomplished best by new construction.

Flexibility

The flexibility of the games area is not high. Billiard tables are too heavy and adjustment too important to warrant their being moved. Bowling alleys obviously serve only their original purpose. Table tennis areas can be used for other activities, but not easily. Table games areas such as card, chess or checker rooms offer additional meeting facilities, particularly if folding tables are used. The desirability of removing such facilities from general use is a decision to be made locally.

Safety

The games area is often a very busy, congested place, and emergency exits should be available to each section. Wood alleys and table tennis tables, plus the likelihood of much smoking and many paper wrappers call for plenty of ash trays, urns, and wastebaskets, and for careful cleaning and fire protection. Floors should be burnproof, since cigarettes are likely to fall on the floor, and slip-proof throughout. All the equipment should be sturdy with rounded corners. All-over lighting, as opposed to spot lighting, not only provides proper brightness-balance but permits flexibility within such areas as the table tennis, billiard and card room without necessitating electrical changes. Thus, if consolidation of tables to provide additional table room or if a change in the direction of certain billiard tables is indicated, mere moving of the equipment makes this possible. Leaving about five feet of extra room in the table tennis area permits some saving on the floor surface by moving the tables a half station sideways. This changes the position of wear spots,but requires forethought in the lighting. A similar arrangement in the billiards room is not practical because of the weight and construction of the tables.

Smoke and perspiration demand excellent forced ventilation of the games area. The thermostat system of the table tennis room and bowling alley should be independent of other sections and adjusted to the comfort of those participating in these active games. The noise of both facilities should be contained within the area.

Appearance

The appearance of the games areas is important in maintaining standards of behavior. A "pool parlor" atmosphere with men wearing hats, with clothing thrown on chairs, greasy playing cards, money on tables,and profanity and smoke in the air has no place in an educational building. While this is largely an administrative problem, planning for proper supervision, decoration and equipping does much to create a living room or club environment. Coat rooms and racks, plastic playing cards, proper seating, lighting and ventilation, adequate cigarette repositories, functional and tasteful decorating schemes offer a good start towards the creation of wholesome, relaxing surroundings.

Economy and Efficiency

As previously indicated, card and chess rooms may be located away from the billiard, table tennis and bowling facilities,but reasons exist for associating them all. While instruction, tournaments, leagues and parties are held in the games area, most of its usage occurs through spontaneous free play. As a social device to assist persons in meeting and knowing each other this is excellent,and locating game facilities together assists here as well as in introducing students and others to new recreation experiences merely by association. Liberal use of posters and notices plus personal contact in the area makes it an excellent publicity outlet, not only for games but for the union as a whole.

An important function of the games area of nearly all unions is the production of revenue for use elsewhere. Generalizations can be dangerous when applied to any specific union but, unless local situations are unusual, it is safe to assume that bowling and billiards can operate at a profit. Table games such as chess, checkers and table tennis are usually free. The location of the game area is quite likely to affect its use and the resultant revenue. Removal of table tennis and billiards from the third floor to the ground floor of one union building doubled the games business. Placement of the games area on the basement level, thus eliminating the climbing of multiple stairs in most buildings, assists not only in lessening sound transmission but also in increasing revenue production.

Each division of the games area should be separated from the others to prevent noise and traffic interference. Billiards is essentially a quiet game demanding concentration, whereas table tennis is active and noisy, along with bowling. Chess and checkers are like billiards, while card playing demands less restraint but is not a noisy pastime.

If pressed for space, the table games other than table tennis can be housed together quite satisfactorily.

Circulation presents somewhat of a problem in the game areas. Players, to reach vacant tables, often must pass those in use and some interference may result, particularly in table tennis. Extra space at the edges of the rooms helps to eliminate this. It is quite obvious that passing through one game area to reach another only aggravates this situation, hence a central game lobby leading to the various divisions appears to be the solution to this problem as well as that of control.

Control Center

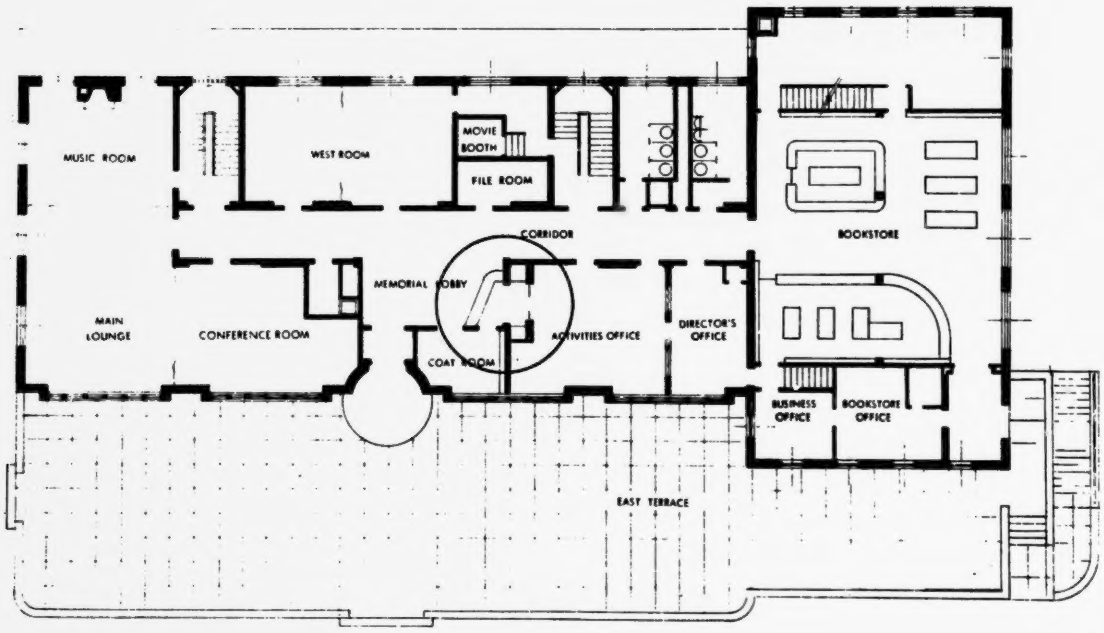
Reasons for a central control -- care of equipment, collection of charges, suppression of gambling, equitable use of facilities, proper behavior, supervision of pin boys and availability of instruction -- have been listed previously. Located strategically in or adjacent to the central lobby with vision into each of the game rooms, it permits supervision of the whole area, and all users pass this central point. The lobby offers an excellent spot for the exhibition of trophies as well as posters, tournament results, letters and notices. The control counter should extend into the bowling alleys to permit transaction of business there, including sales and rental of shoes. Equipment can be issued in the lobby, although exchange of paddles and balls directly into the table tennis room eliminates some confusion in the lobby.

Because the control counter cannot always adjoin all the game areas, the cards and chess rooms may be separated from it but visible through the lobby. The same is true to a lesser extent of the billiard and table tennis rooms, where equipment is apt to be used in over-vigorous fashion, such as fencing with cue sticks. Glazing of the walls facing the control desk permits supervision of all the games areas without noise transfer. The glass in the table tennis room should not be placed so that a paddle might strike it during play.

The number of employees on duty in the game rooms is determined largely by the amount the rooms are used. A central control permits one person to operate the whole area during slack hours, with extra help added when needed. Such an arrangement might make the difference between operating or not on weekends and holidays, during vacations or summer sessions, since payrolls being maintained during little or no income periods assume large proportions.

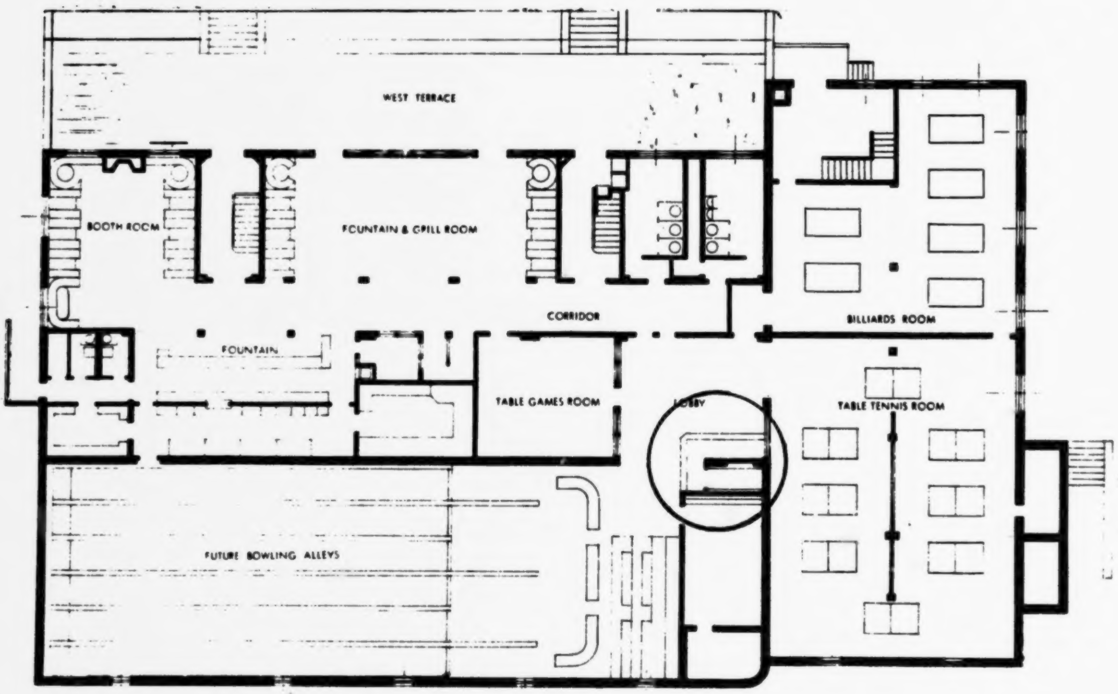
The control center probably consists of a counter with one or more stations, depending upon the number of facilities. Thus, a large and busy union might have a station for the billiard room, one in the bowling alley, a third in the table tennis room and a fourth for general use in the lobby. One man might service all of these stations during slow times or serve all areas at the central station. Each station requires a cash register, a stool, a reservations and use chart, and storage for equipment peculiar to its area. The billiard and table tennis stations should have, in addition, job recording time clocks to assess the charges, if fees are charged on the basis of time. Storage space for extra equipment is needed, perhaps adjoining a workshop in which cues are repaired, bowling pins refinished and minor repairs made on other equipment. The proximity of this shop to the control center makes it possible for the man on duty to do work of this nature when he is not otherwise occupied. A paging system from the control center to all games areas, including the lobby, assists in keeping the facilities in use during busy periods by announcing the availability of a table or alley and permits quick correction of abuses, should the duty man note players sitting on billiard tables, lobbing bowling balls or engaging in any similar acts so frequently encountered in such spaces.

PLATE IV—Flexible Supervisory Facilities


MUSIC ROOM
WEST ROOM
MOVIE BOOTH
FILE ROOM
CORRIDOR
BOOKSTORE
MEMORIAL LOBBY
MAIN LOUNGE
CONFERENCE ROOM
ACTIVITIES OFFICE
DIRECTOR'S OFFICE
COAT ROOM
BUSINESS OFFICE
BOOKSTORE OFFICE
EAST TERRACE

FIRST FLOOR

Fig. 1--Information center (circled) can be manned by office personnel if receptionist is absent.


WEST TERRACE
BOOTH ROOM
FOUNTAIN & GRILL ROOM
CORRIDOR
BILLIARDS ROOM
FOUNTAIN
TABLE GAMES ROOM
LOBBY
TABLE TENNIS ROOM
FUTURE BOWLING ALLEYS

GROUND FLOOR

Fig. 2--Games control center (circled) permits supervision of all games areas.

Memorial Union, University of Rhode Island
Kingston, Rhode Island

If equipment such as bowling shoes or billiard cues is sold in the games area, some sort of a display case should be built into or near the control center, with stock immediately available. The sale of refreshments over the counter seems a highly dubious operation here except for the smallest of unions, and the use of vending machines in the games lobby is preferable if distance from the food service area is too long. Dispensing of equipment is expedited if storage racks are designed for quick circulation. If identification cards are to be required in exchange for equipment, a system whereby they replace withdrawn articles such as playing cards or paddles aids in rapid turnover. Racks for paddles, handles out, properly labelled as to type (sandpaper, rubber, cork or wood faced), and holders for playing cards, cribbage, chess and checker boards, dispensers for table tennis balls, racks for bowling shoes with each shoe labelled prominently as to size, are some of the items which make for a smoother operation. The whole control center should be equipped with sturdy locks to safeguard the properties kept therein. If reservations are to be accepted, an outside telephone should be installed.

Table Tennis Room

A large, square room full of table tennis tables is chaos, as loose balls and persons retrieving them interfere with other players almost continuously. However, the insertion of a wall in the middle of a large room, perhaps screened sturdily above wainscoting height to permit supervision and circulation of air, eliminates much of the chasing of balls. Such an arrangement permits expansion into other areas, or growth through the addition of a relatively small area. A future addition should take into consideration the fact that players must reach unoccupied tables while others are being used, hence access to and exit from all tables without undue interference with players is desirable. If over-all ceiling lighting is installed, tables may be moved for purposes of consolidation, tournaments or exhibitions. Incandescent lighting is to be preferred in this area to eliminate the stroboscopic action of fluorescent lighting on the moving ball. This area requires strong ventilation, and expansion plans must provide for this while considering that the noise created in the table tennis room may demand all artificial ventilation with no open windows.

Because the tables are relatively light the table tennis area does lend itself to other uses, although storage of the moved tables does present a problem, and the loss of continuous activity a possible source of complaint and loss of revenue. For these reasons no activities foreign to its primary purpose have been listed in the Classified Facilities Table 2. It should be noted here that the domestic folding table does not stand up under the vigorous use of a college union, thus lessening the portability of the equipment. The long narrow shape of the table tennis room also reduces its flexibility.

As the site of an active sport, the table tennis area must be as safe as possible. No projections, splintered tables, corners or slippery floors should present hazards. Ventilation must be strong and temperature controlled to prevent overheating of participants. Enough room should be left between tables to prevent the collision of players at adjacent tables, and access room allowed at each table. The noise created within the room should be absorbed and confined there as much as possible. Doors should open away from the room to prevent collision with them.

The appearance of a table tennis room need be little more than clean and functional. This, with good lighting, proves attractive enough to induce play. Tables are green, and windowless walls should match to provide a nonobtrusive background for the flight of the ball. Floors should also blend with this arrangement to maintain brightness-balance. Surface finish should be flat rather than glossy. All this makes the task of seeing and hitting the white ball that much simpler. If light reflection from the walls is desired, a light wall above eye level interferes very little with play.

The vigor displayed by college students in playing table tennis dictates strong construction. The 12-foot by 20-foot minimum usually suggested for the 5 by 9 table allows 5-1/2 feet behind each end, enough room for novices who merely bat the ball over the net but quite circumscribing for better players. Walls receive a battering from drawn-back paddles, elbows, bodies, and, most particularly, feet, and should be resistant to such blows and weights. Heating units should not be placed in these walls unless above the impact area. Cement or glazed tile walls, properly colored, make good wall surfaces, with the latter being more attractive and easier to clean. Rubber heel marks on the walls present a maintenance problem here. If acoustic plaster is used on walls, its softness demands that it be placed high enough to be out of reach of swinging paddles.

Ideally, but not at all practically, a table tennis court resembles a four-wall handball court with walls all around, separate access, wooden floors for use by athletic shoes only, and a high, unobstructed ceiling with, perhaps, an observers' gallery. Since this scarcely fits into the budget, construction or purpose of a union building, as close an approximation as possible to this ideal commensurate with the limitations of budget, space and purpose seems desirable. A normal, unobstructed ceiling height of 10 feet accommodates all but the most particular players, although higher ceilings are desirable. The minimum length of 20 feet can be doubled at one end of the table tennis room to approach the official tournament requirements of 35 feet for those who consider themselves expert, or for tournament and league play, by the simple process of not extending the dividing barrier of a square room. This enlargement is not so easily accomplished in the long, narrow table tennis room.

The floor of a table tennis room presents a serious maintenance problem. Unlike handball courts or bowling alleys, the use of special footwear is not practiced, and its institution is highly questionable as a practicable measure. The abrasion caused by street shoes creates considerable wear of the floor at the end of each table, largely at the center of the table, hence easy replacement of sections of the floor is indicated. (The surface under and between the tables is relatively permanent.) Because the action causes a gradual wear which becomes heavier as it approaches the center of the table, it is usually necessary to replace the whole of the playing area behind the table ends to assure a level floor surface. Thus, if a plastic or other tile floor were used, replacement of only the worn tiles is apt to leave a surface higher than the original tiles. Composition floor surfaces which can be troweled to a feather edge for replacement purposes may represent a solution to this problem, if they can offer the durability needed. Any floor which requires waxing, such as asphalt tile, cannot be used since it is rendered slippery by waxing. Cement is dusty, and it and terrazzo are hard on the feet and damage the balls, wood is difficult and expensive to replace, cork or rubber not durable, and strips of wide rubber runners subject to discard at the first tear. As previously suggested, overall lighting and extra room permit of moving tables to spread the wear.

Table tennis tables receive considerable punishment. With heavy people falling on them in trying to hit balls dropping just over a net they demand sturdy underpinnings, and the nets, frequently struck during this process, must be strong. Steel tables are available, but are heavy and not official. A custom-built table of two sections (really two tables) with four-by-fours for legs and supporting members, held together with nine foot wooden joining strips screwed on the sides of the legs, provides a highly satisfactory and durable base for permanent tables. The tops of plywood, painted deep green and striped on all edges, when screwed to this base, offer many hours of play and, by the simple expedient of removing the joining strips, may be reversed for double use merely by turning each half of the table. Actually, with a little care, these tops may be removed, turned over and painted to provide additional playing surfaces. It should be noted that nearly all the wear on the playing surfaces occurs at the center of the ends, and that the transfer of these worn sections to the center of the table affects play practically not at all.

A variety of paddle facings to meet the demands of the different users is an inexpensive service. Resurfacing of these paddles is scarcely worthwhile if they are purchased in lots large enough to assure an equitable price. It may be desirable to obtain several small C-clamps to replace paddle handles. A toothbrush, scouring powder and water clean the balls for continued use.

The number of table tennis tables to be installed depends upon such local conditions as the popularity of the game, adequate facilities in living units, possible use by commuting students, ratio of men to women, accessibility of the building itself and the proposed charge for use. The facility can be used for a brief space of time, attracts both sexes (unlike most billiard rooms), requires little skill for enjoyment and appeals to active college students; thus it is quite likely to prove popular as a fill-in or kill-time pursuit. Allowance of 16 feet instead of 12 in width per table permits some expansion of facilities through future compression of tables, and may be a partial solution to original planners. If the facilities are superior to those in living units, if restrictions for entertaining members of the opposite sex therein are strict, if tournaments and leagues are to be promoted, then the table tennis allotment should be greater than if the reverse is true.

Card Room

A card room may or may not be limited to the playing of cards. Normally, it is used for a variety of table games, such as chess, checkers, Scrabble, Monopoly or other fad of the moment, as well as the usual card games of bridge, cribbage, pinochle and the like. Because gambling is a recurring problem here, visible supervision is most advisable. The expansion requirements of the room are not demanding since it can fit into nearly any area, a table and four chairs requiring no more than nine square feet including access area, although more space than that is desirable. If lounges can be used for tournaments and parties, the expansion problem might not be an important one for years to come.

If the normal activities of the card room permit suspension, the area can be used as an auxiliary meeting room, with local factors determining this policy. If the building is to be used for conventions and meetings during vacation periods, the flexibility of this room might make it a valuable facility. The use of sturdy square folding tables with hard plastic tops and folding or stacking chairs permits the equipment to be moved and stored easily, and used in combinations. Overall ceiling lighting allows freer use of the room as does strong mechanical ventilation and, at least in larger rooms, a self-contained public-address system.

Safety devices normal to such sedentary areas as lounges and meeting rooms suffice for the card room. There should be at least two exits and circulation space in the room. Ash trays and ventilation should be available for the smokers. Floors should be slip-proof, and doors free swinging. Light at table top height should be about twenty-five foot-candles, the tops as non-glare as their surface permits (preferably a darker color hard plastic, with a wood or linen finish), and the area protected from noisier portions of the building.

An informal and relaxing atmosphere which maintains the standards of appearance and behavior should be achieved if the dangers of the "pool room" environment are to be avoided. Tasteful colors, photomurals, art prints, drapes, flowers and other decorations can do much to enhance the appearance of the card room. If folding chairs are used to increase the flexibility of the room, they should be as attractive as the budget permits, the two seeming to accompany each other here. If stacking or conventional chairs are used, more attractiveness is quite likely to result. It is suggested that swept-back legs be used. A few upholstered arm chairs, or two-seaters, and magazines may appear desirable to increase the homelike atmosphere of the area. Two, three or four persons are usually seated around the card room tables. At times more than four may play together, in which case they can still find room, albeit crowded, around a thirty or thirty-six inch table. However, a few larger tables, possibly round, may be preferred to accommodate the larger groups.

When placing tables and chairs, about 3 feet seating space per player should be allowed to permit room for shoving back chairs and for circulation. If the tables are placed so that their edges are at 45-degree angles to the walls of the room, roughly 20 per cent more floor space can be utilized. Wastebaskets located near each table reduce the amount of litter accumulating on the tables, since candy and cigarettes invariably are consumed during play. If refreshments such as coffee, soft drinks and sandwiches are introduced to the card room, the disposal of containers and refuse must be provided for.

The equipment to be used in the card room should be able to withstand long hours of use. Plastic playing cards which may be cleaned and for which single replacements are available outwear paper cards many times over, while preserving their utility and appearance. Tough, single-piece boards for checkers, chess, Scrabble or other table games should be used, and the choice of pieces for chess, checkers and similar games should be based on durability. Heavy wood chess sets are inexpensive and more practical than the more fragile plastic pieces. Cheap golf pencils and scratch pads suffice for keeping score, and a collection of rule books for card games, chess, checkers and other games, including billiards, bowling and table tennis, kept at the control desk assists in arbitrating the inevitable disputes.

Billiard Room

Unlike table tennis, billiards do not require backstopping, and hence may expand into new areas more easily. Adequate lighting (about twenty-five foot-candles on each table) and structural strength to support the heavy tables must be available. Each pocket billiard table requires 14 by 9-1/2 feet of floor space, including room for using a 57-inch cue. This allows no space for seating of participants or spectators, although such space may occupy some of the margin around the 9 by 4-1/2 foot table, as there is little interference there with the cue. (An additional 6 inches is needed for straight rail billiards.)

As previously mentioned, the billiard room does not lend itself to anything other than its primary use, and even such billiard events as exhibitions in the room present a problem when accommodating crowds, since billiard tables are difficult and expensive to move. Dual exits, nonslip floors, non-projecting pockets, bridge holders, and cue and ball racks are among the safety precautions to be adopted here. Brightness-balance is not as important as in the table tennis room and on stationary objects. Fluorescent lighting, supplying at least twenty-five foot-candles to all parts of the table, is acceptable, although overall lighting supplying the same intensity to the tables and somewhat less elsewhere lessens eye strain and makes a more attractive room. Direct outside ventilation may be used since the area is a relatively quiet one, but forced ventilation is desirable.

Mention has already been made of the "pool parlor" environment. Obviously, the sport itself has nothing to do with the stereotypes associated with it, but since they exist nevertheless it is important that they be eliminated on the campus, and the constructive approach associated with the better clubs used. Most of the measures to be adopted are administrative ones, but the initial appearance of the room is important. New, clean and modern tables with good cues, bridges, balls and triangles foster proper usage and appreciation. A well-lighted room, as opposed to spot lighting, and good ventilation, as against a smoky haze, help to maintain tone, and plenty of cigarette urns assist in keeping butts off the floor. Attractive decoration such as photomurals help to dissipate the "pool parlor" idea.

A firm, level floor is needed to keep the billiard tables level and in place. If each table has five feet of playing area on all sides of it, enough room is available for playing. The tables may be arranged at right angles to each other if space can be conserved thereby, and may be a foot or more closer to each other if absolutely necessary, as cue butts may play over the neighboring tables. If space permits, six or more feet between tables allows freer circulation and less interference between players at adjoining tables. If overall lighting is used and tables are widely spaced, the billiard room may house additional tables at a later date without serious inconvenience.

Additional space around the room is needed to take care of the seating of participants and spectators. At least three seats should be allotted per table to handle four-player games, with as much extra seating provided as appears necessary. Special chairs affording extra height for a clear view of the whole playing surface are available commercially, but any attractive, comfortable and durable seating can be used if budgeting problems arise. Cue racks should be placed on the walls where they can service as many tables as possible, and should offer a selection of cues. An alternate to this is a cue rack holding up to seventy-two cues located centrally in the room, thus offering a larger selection of cues than any single station, but occasioning somewhat more walking and congestion. The racks should be mounted with the bottom about forty-five inches from the floor, thus bringing the weight designation of the cues to approximately eye level. If revolving racks are used, they should not be placed where seated persons strike them upon arising.

Other auxiliary equipment to be incorporated into the billiard room includes talc dispensers mounted safely at waist height, one to every two or three tables, bridge holders beneath each table, counters mounted in the rail of each table (thus eliminating the overhead markers of "pool room" memories), waste baskets and cigarette urns. Overhead chalk holders may save on chalk when compared with using loose chalk, but are unsightly and dust catchers.

Maintenance of the billiard room is all-important in preserving the desired atmosphere, and the proper equipment to accompany the correct technique is necessary. Table covers and brushes, mending needles, thread and tape, cue repairing machines, tip clamps, extra spots, tips, glue and rubber bumpers are among the items needed. The use of a vacuum cleaner on billiard tables tends to draw the plaster of Paris from the slate joints, and so the inclusion of a hand vacuum cleaner is questioned unless it is used by conscientious workmen. Enough spare cues should be available to permit an economical retipping schedule without the lack of cues interfering with play.

Pocket billiard tables should be 4-1/2 feet wide and 9 feet long, straight rail tables 5 feet by 10 feet. If pocket players are to rack their own balls, the use of gulley ball returns place all the balls at one end of the table for easy storage and racking. This central location of the balls eliminates much of the tossing of the balls on the tables which accompanies the trips around the table removing balls from the pockets and returning them to the racking position, consequently eliminating much of the damage to cloth, balls and slate caused by the impact. Gulley returns also eliminate the damage to leather pockets, thereby tending to cancel out the additional maintenance caused by their inaccessibility. The location of all balls at one end of the table does lead to continuous racking there with resultant concentrated wear, a condition which can be rectified when using pockets by reversing the break spots. In the interests of speedier play and less noise, horseplay, and wear and tear on the equipment and the engendering of respect for the equipment, the gulley return has much to recommend it, but there is also much room for consideration of pocket tables.

Much walking occurs during the course of a billiard match. Floors wear out in the line of walk with the most wear taking place by each pocket. Rubber or plastic runners may be used more safely around billiard tables than in the table tennis room, because the deliberateness of the action does not render each tear or crimp a great hazard. If rubber or cork tile can be laid on the floor, it offers a resilient surface which is easy on the feet as well as the miscued ball which jumps from the table. Some tile-- asphalt, plastic, rubber, cork or wood-- is indicated to permit replacement of worn sections. Composition flooring which can be replaced by troweling may solve the uneven wearing problems of the billiard room when and if it is proved satisfactory.

Walls of the room are subject to being struck by cue butts, either accidentally or wantonly, and round chalk spots resulting from cue tips being pressed against them usually appear, as do scuff marks from the bottom of shoes inverted against them as the progress of the games is watched while using the walls as partial support. Hard-surfaced, easily cleaned and durable walls are required, and glazed tile or hard plastic or wood wainscoting are among the materials which meet the requirements. Hard plaster above head level and acoustic ceilings out of reach of cue sticks serve to complete the surfacing of the area.

Chess Room

If, as at the University of Pennsylvania's Houston Hall, a separate chess organization has its own quarters in the union building, some of the items connected with a chess room, such as issuing and storage of equipment or supervision of play, become less of a union problem. If the chess room is really a part of the card room, then the special planning is not necessary unless a few tables, isolated to provide as much quiet as possible, are reserved for chess.

A separate chess room permits of expansion quite simply, as a lounge, meeting room or other well-ventilated space can be transformed easily into a larger chess area. If expanding requires removal to a new location, the issuing of equipment must be remembered. It may be possible for a chess room near a browsing, music or other quiet section to utilize this issue center, thus maintaining the quiet traditionally associated with the game.

The chess room, like the card room, may be utilized for other purposes under similar conditions. Usurpation of this area may not cause as much dislocation as the loss of the card room, since chess players can repair to other quiet areas such as browsing or music rooms without presenting much of a possibility of interference. The visual task in chess is not as critical as that in some of the other games, but constant staring at the board makes brightness-balance desirable. About twenty foot-candles of illumination may suffice.

Since only two players occupy a table and may sit there for hours, there is room and need for larger and more comfortable chairs than those of the card room. Tables should be finished in hard plastic and may be purchased with chessboard designs built into them, a factor which eliminates the use of boards but limits somewhat the use of the tables for other purposes, as the chessboard design does not possess any particular aesthetic qualities. Thirty-inch square tables offer sufficient room for play, and may be lined up easily for use in exhibitions or tournaments.

Equipment needed for the chess room includes the usual smoking and waste accessories. Flexible plastic boards may be obtained which are easier to store and carry. If these or permanent table top boards are not used,a stiff, nonfolding board is likely to give the best service. Large, heavy wooden pieces last longer than delicate plastic sets, are inexpensive,and easy for spectators and players to identify. Chess clocks for timed play are also inexpensive and add a professional touch.

The quiet dignity associated with chess might well be reflected by the chess room with subdued decor, art work on the walls and possibly a carpet on the floor. Overall ceiling lighting increases the flexibility,but the use of floor lamps to augment ceiling illumination is more practical here than in the other game rooms because of the small likelihood of their being knocked over. Tables may be grouped more tightly than in the card room because only two players (plus occasional "kibitzers") use each table.

Bowling Alleys

The use of standard ten-pin bowling equipment permits the learning of skills which can be used almost universally throughout the United States, as well as making participation in American Bowling Congress and intercollegiate tournaments possible. Such equipment is rigorously specified by the American Bowling Congress and includes such items as all-wood alley beds, gutters, kickbacks, approaches, pin decks and foul judge stands. Specifications for alleys, gutters, kickbacks, pits, pins, balls, resurfacing, pin spots and other items pertaining to bowling are established. Dimensions demand minimum approaches of 15 feet long; beds, from foul lines to head pins, 60 feet long with 34-3/16 inches more between the head pin and the rear of the bed; and 30-inch pits. In width the alley beds may vary between 41 and 42 inches with each gutter between 9 and 9-1/2 inches, for a total width between division boards of 60 to 60-1/4 inches, exclusive of ball returns. With five-man teams commonly used in bowling leagues, seating for at least four bowlers per alley must be provided in addition to a scorer's seat, room for spectators, for those waiting to bowl and those who may have just finished but have not yet left. The overall length of a bowling installation should average about 105 feet and the width of each alley about 5 feet, 7-1/2 inches, including ball returns. If automatic pin setters are contemplated,added pit room may be required. Some minor variation from the foregoing specifications will be encountered if duck or candle pin alleys are installed.

The difficulties involved in expanding bowling alleys, largely caused by their space requirements, have been dwelt upon previously. Lateral expansion into adjoining space specifically allocated for this growth is one way of achieving additional area. Additional building is another, and it is possible to add to bowling alley facilities by constructing more alleys extending directly away from the original ones, so that seating and approaches are in the center of the area and the pits at either end. This permits efficient control over the bowlers,but makes supervision of pin boys,and repair and changing of pins and pit equipment more difficult.

Protection of equipment, as well as safety, indicates the desirability of requiring the use of bowling shoes, which, in turn, dictates their rental and/or sale. Sanitation of rental shoes through such means as ultra-violet light and antiseptic powder is not well-supported by scientific evidence,and so rotation of equipment and use of extra socks over the player's own appears to be indicated if safety is to be maintained. Pits provided with official cushions, kickbacks and room for pin boys to move about are necessary to afford protection of the personnel working there,and alley approaches must be kept smooth and free from obstructions. Proper ventilation should center on the seating end and remove smoke and odors efficiently while offering some temperature control. Transfer of sound to other parts of the building must be eliminated if the bowling operation is not to interfere with others working in or using the building.

Manufacturers and operators of bowling alleys have been most conscious of late years of the appearance of their alleys, much of this consciousness being due to the desire to develop patronage among women. Since the "pool parlor" atmosphere was often associated with bowling, much thought and effort went into eliminating it with the result that modern bowling installations are usually examples of correct color harmony, good illumination and proper design. Fluorescent lighting as components of masking units affords even illumination without glare in the pin zone, and the lighting in the rest of the room is of an intensity high enough to minimize brightness difference. Waste receptacles, ash trays, beverage bottle holders and similar items permit proper maintenance, and acoustic treatment prevents the pin fall noise from becoming unpleasant while still permitting bowlers to hear the results of their efforts. The larger bowling manufacturers are prepared to offer packages which include all the details needed by a modern, attractive bowling alley enterprise, including lighting, seating, score pads, shoes and hundreds of other items. While such packages may be somewhat more expensive than installations obtained from diversified sources, they do tend to offer an attractive appearance as well as efficient engineering and professional assistance.

Bowling alleys function properly when those using them do so efficiently, quickly and with enjoyment. They should meet official standards, should provide proper facilities for scoring, seating and chalking hands. Enough balls and pins should be on hand to keep play moving, and equipment for maintaining league and tournament standings should be available. Foul lines should be easily seen, and automatic foul detectors installed if possible.

The rather recent advent of automatic pinsetters has presented additional problems for planners. These machines offer definite bowling possibilities at any hour, as opposed to the unreliability of pin boys. The increasing difficulty of obtaining pin boys encountered by nearly all bowling alley operators, commercial or collegiate, apparently dictates that almost all new bowling alley installations will include automatic pin setters, despite their high cost and their demand for considerable mechanical attention. It seems safe to say that those responsible for planning a union building with bowling facilities should consult the suppliers of pin spotting equipment to obtain more definite information concerning their product. The pit and control requirements of these machines should be considered to permit their installation, either initially or subsequently.

If pin boys are used in a bowling installation, economy dictates that the alleys be arranged to permit each man to set "double," i. e. work alternately in two adjoining pits. In this way one man can keep two alleys in operation, particularly if semi-automatic pinsetters are installed. The undesirability of bowlers waiting for pins to be set and balls to be returned is obvious in terms of turnover, hence any device in the pit which accelerates play is to be carefully considered. Separate access to the pits is desirable to prevent pin boys and maintenance men from walking on the alleys or gutters. A pin room for storing, repairing and turning down pins should be located near the pits, and a waiting room and locker-shower room for pin boys in the same area is advisable, at least in the larger installations.

The efficiency of the control center in collecting fees, assigning alleys and pin boys, selling or renting equipment, or operating the pinsetting machine controls, has been covered previously, but re-emphasis of the need for thought concerning display and service cases, control panels, cash registers and storage may be helpful. A public-address system within the alleys and bowling lobby, if any, is most desirable in larger installations, particularly during league and tournament bowling. Electric outlets should be located strategically to permit sanding, buffing and vacuum machines to service all portions of the area. If all maintenance work, including resurfacing, is done by the union staff, sufficient work space should be allotted and some fireproof storage included.

OUTDOOR AREAS

The practicality of extending the union facilities out of doors depends upon such things as the type of college, kind of program anticipated, location of the campus and of the building, existing campus program and facilities, and climate. Union buildings, such as those at Wisconsin, Miami, Iowa and Iowa State, which adjoin bodies of water have added opportunity for developing outside facilities. Even if adjacent facilities such as tennis courts or a sailing club are not administered by the union, they still serve in expanding the centralized recreation opportunities.

Cement slabs, sun decks, picnic and outdoor games areas, and parking lots are some of the outdoor facilities found on union building grounds. Terraces, often a variation of the cement slab, exist as adjuncts to dining services or lounges (Brown, Rhode Island, Michigan State, North Carolina State, Wisconsin, Washington State, Iowa State, for example) and may be cement, flagstone, terrazzo, or other material. One terrace, at Washington State College, was designed to permit flooding for ice skating, while another, at the University of Miami, takes advantage of its climate to permit the expansion of its cafeteria from a capacity of five hundred indoors to two thousand outdoors.

The Classified Facilities Table 2 shows that an outdoor slab is the most versatile facility of the union in terms of possible use, but it fails to point out that very few of its functions are entirely satisfactory. The element of weather makes for uncertainty concerning events scheduled there. Insects are apt to prove troublesome, as are extraneous noises such as airplanes or trucks. Its surfaces are usually not as satisfactory for dancing, its acoustics for speaking or music, its wind for table tennis, its lighting for performances or motion pictures, its boundaries for ticket collections, as its indoor counterparts, yet its advantages in temperature, setting, cleaning and novelty do much to recommend it. While some activities, such as horseshoes and sun bathing, obviously must be carried on outdoors, most of the union activities which move outside do so for reasons of weather or novelty.

Expansion of the outdoor areas is apt to be difficult since it quite likely will run counter to plans for expansion of other buildings or of the union itself or to the addition of new buildings, unless particular care is taken in drawing up the development plan of the union building and the campus.

Parking Space

With the nearly inevitable growth of all colleges imminent, the need for more parking space must be considered unless campus regulations are tightened to eliminate the added vehicular traffic. Thus, as the building grows to service the large number of people visiting it, it may be faced with the demand for more parking space while being forced to take over some of the present parking area for more building room. Since, as the center of campus activity, it is the destination of many pedestrians, its growth makes it desirable that crowded street parking and congested traffic be prevented from developing. While many buildings, such as classroom structures, can be used without parking lots in close proximity, the existence of ballrooms, theatres and similar facilities which require more formal attire during evening functions make parking a near necessity for the union building, and some evidence exists that patrons would be willing to pay for parking privileges. Expansion of a parking lot needs little more than area, providing the ground is relatively level and free of ledge. Some thought should be given to the effect on traffic which such expansion might have.

Parking lots do cover great expanses of paved area which could be used for many things, as the Classified Facilities Table 2 indicates but, unfortunately, any degree of flexibility which is obtained usually interferes with the primary purpose of the area. Thus, a series of badminton courts obviously cannot be used with cars parked in them, yet, when the lot is empty the people who might use the courts are likely to be gone. Nevertheless, week-end and summer-session facilities may be located on parking lots with portable signs available for reserving such spots. If parking for staff members is reserved, then this section by previous arrangement might be used for activities. For larger activities, such as block dances or roller-skating parties, special traffic control measures are needed to keep the area clear.

Lighting of the parking area is desirable for safety reasons but this also increases its flexibility by permitting evening activities, and weatherproof electric outlets on several light poles or other places facilitate the use of public-address systems or concession booths. Occasional sanding and sweeping plus some last-minute sanding assist in eliminating the danger and dirt of crank-case drippings. If the lot is a large one, it may be sectioned off to permit the closing of some portions during slack periods. If daytime parking on campus is limited to faculty members, it may prove feasible to construct such a lot near the union building, with the thought that unrestricted evening parking can solve this important portion of the union's parking problem. It should be obvious that the flexibility of the lot is increased if its surface is level.

The stress which is placed on safety in connection with automobiles makes mentioning the importance of proper approaches and exits, well-marked and lighted signs, well-defined parking lanes, pedestrian paths, sufficient illumination and unobstructed views, nearly redundant. At least one union (Oklahoma A & M) uses parking-lot attendants to assure proper operation and safety measures. The surface of the lot should be hard, easily plowed (if snow is a factor), and well drained. Speed and direction signs should be prominently posted, and a light intensity of fifteen to twenty foot-candles be available for both safety and activity reasons. Three hundred square feet should be allowed for each car, and single driveways should be at least 10 feet wide; double lanes require 16.

A union parking lot may become a lunchroom for day students with resultant paper bags and milk cartons littering the ground because of its proximity to a quick glass of milk or other complement to the bag lunch. The strategic distribution of refuse cans plus a possible campaign on cleanliness from time to time can do much to keep the parking lot clean. Light poles, signs and parking lanes should be neatly painted, and landscaping used to mark the boundaries of the lot as well as pedestrian entrance and exit lanes. Any activity equipment such as portable badminton or volley ball net supports should be well painted, as should any lines used for activities. Hard surfacing, such as concrete or asphalt, looks well, while proving most practical for constant and year-round use.

The prime function of a parking lot is to furnish a stopping place for automobiles with, in the case of the union building, these automobiles carrying passengers who use the union building. Therefore, it should be easy to get into and out of the parking lot, and to walk to the union building quickly. The ease with which these operations are accomplished may affect the effectiveness of the whole union operation. A car census in this day of the nearly omnipresent motor car, the kind of facilities and program offered by the union, the expected peak hours and loads, the distances from living units, present and future car regulations, and other parking facilities are some of the items to be considered in making the parking lot function properly. The establishment of an inadequate parking lot is more likely to cause traffic problems than the absence of one, since it tends to bring more vehicles to the area in search of parking. Some space almost certainly is needed for salespeople, guests and staff members, and union buildings with hotel units require parking for overnight guests.

Unless a college is in the unusual situation of having no traffic and parking problem, it is quite certain that considerable man hours are spent in controlling the use of automobiles on campus. The union parking lot, handy as it is to the campus center, provides a prime target for long-term parkers, with the likely result that the actual patrons of the union building have no place to park or are forced to walk from the far ends of the lot. Thus, parking control affects the union either directly, as an administrative burden if the lot is operated by the union, or indirectly, by the loss of patronage by those who can find no suitable parking. The alternative to no-limit parking is, of course, limited parking, with the problems of timing and policing involved. It may be that the device used by so many municipalities -- parking meters -- offers a partial solution to the union's parking difficulties, but this would reduce at least some of the area's flexibility by creating obstructions throughout.

Those who should be included on the planning committee might be the chief of the campus police, local and state police, buildings and grounds representatives, as well as representatives from whatever organization or office enforces parking regulations.

Cement Slab

Expanding a cement slab is an economical way to enlarge a flexible activities area inexpensively. If little or no precedent exists to assist in determining the success of such outdoor activities as dancing, concerts or motion pictures, wisdom suggests starting with a relatively small slab which can grow as necessary, since all that is needed for such expansion is a properly located and levelled space. Electricity for lighting and service outlets should be considered, as should possible changes in traffic patterns.

The great number of uses to which a slab may be put, weather permitting, may be increased if it also serves as a roof. In at least two union buildings, at Iowa State and Rhode Island Universities, bowling alley space is located below the terrace, thus serving to more or less isolate the noise of bowling from the rest of the building while using the roof to good advantage. Other roof space might well meet the purposes of the slab if it is properly planned to withstand the added weight, sharp table and chair legs, high heels, snow or rain, and general wear.

If the slab is to be as flexible as possible, it should drain well, be level, smooth, partially-shaded, and have a stage or shell, and storage facilities. Such equipment as folding chairs and tables, portable public address systems and pianos would move from the union building as needed, but some park benches or a low parapet can provide some permanent seating. If a terrace is an adjunct to a food or lounge area, porch chairs and tables with umbrellas furnish suitable seating, and speakers from the building's public address system can be used for broadcasting athletic events or playing music for listening or for dancing. If outdoor movies are expected to assume an important part of the program.a portable projection booth on wheels accommodating two projectors makes this more efficient. At any rate, electric outlets should be installed for such projection and may require wiring the slab itself. Where thirty-five millimeter film or carbon arc equipment is to be used, a permanent booth is indicated with heavy-duty wiring. If flooding for ice skating is anticipated, means of damming and draining the water must be provided. An outside water supply is needed to permit spraying and flooding.

Should many outdoor performances such as concerts, plays, lectures or motion pictures be expected, a combination stage, shell and storage unit at one end of the slab with its own public-address system and stage lighting aids in productions. The elaborateness with which curtains, wings, crossovers, acoustic treatment, lighting, entrances, dressing rooms, storage facilities and similar aspects of the indoor stage are provided depends upon many factors such as budget, climate and summer session. Unless precedence for a successful outdoor program exists, a modest start on such a structure seems indicated. A vertical rear wall, an inclined ceiling and a stage should provide a good start.

The safety aspects of an outdoor slab differ from indoor areas since fire and quick egress present practically no problems. The stage, shell or platform should be roofed to provide protection for musical instruments, stage properties and other equipment, and the union itself, or some other building, should be near enough to serve as an audience shelter during sudden downpours and to provide toilet facilities. All equipment should be as weatherproofed as possible with electrical equipment such as public-address systems, service outlets and lighting built for outdoor use. All outlets should be capped to keep out water, sand and other objects, and any included in the slab itself should be flush with the surface. Access to the slab should be safe, and any damming devices used in transforming the area into an ice skating rink should not present obstacles. The slab should drain to its periphery to eliminate drains in its surface, and all drains should be protected by landscaping, fencing or other device to eliminate a potential hazard. Such drainage should be dumped into a storm sewer and not be permitted to be an added burden on the sanitation system.

Dancing is almost a certainty for any outside slab or terrace and is accomplished best on a smooth surface. Such surfaces may be obtained on smooth cement with deck paint, sealer, and corn meal or borax but, as other events may succeed dancing, steps must be taken to remove the borax or corn meal after the dance. Hose outlets, which may also be used for flooding, should be provided to permit prompt elimination of this slipperiness, as well as cleaning of the area and its equipment. The intensity of lighting on the slab is not important as long as it remains bright enough to prevent accidents, since most of the evening activities are improved by the darkness. Naturally, lecturers, orchestras and the like require around thirty foot-candles of illumination for reading scripts or music. Lighting for concerts or productions should approach the requirements of the theatre.

Nature can do most of the work in enhancing the appearance of an outdoor slab; the slab itself can have little intrinsic beauty. Terraces or borders of flagstone, tile or terrazzo can offer more, although a flagstone surface may be rough for dancing. Outdoor furniture of various kinds is available, and chairs with sturdy, replaceable synthetic tapes are both practical and colorful, and do not get as hot when standing in the sun as metal seats. Umbrellas and enamelled tables also lend color to the outdoor scene, but well-kept turf and shrubs, and a plenitude of trees make the greatest contribution to the appearance of the area. Care must be taken that trees and other natural features that are desired to be preserved are not destroyed during construction. Well-planned walks serve to protect the grass but need assistance from either artificial or natural barriers on most campuses.

Some facilities for decorating the area by pennants, Japanese lanterns, flags or other means may be desired, and demand running wires overhead. These wires require anchors in the form of trees, utility poles, other buildings or especially constructed posts, and should be raised high enough to prevent their being reached from the slab. Underground wiring to all poles and outlets eliminates unsightly wires.

The functioning of the slab depends greatly upon its surroundings. Noise, heat, lack of shade and insects are some of the things which may determine its success. Basically, however, it is merely a large multipurpose room and it requires many of the same arrangements.

Preparing an outdoor area for use may require considerable work in the way of transporting chairs, pianos and other equipment. Moving equipment from the union building should be planned for by the installation of ramps or runways for dollies or hand trucks, with doors leading to the outdoor area large enough to permit the passage of a piano. If outdoor furniture is used on a terrace, it requires storage room when out of season and even during nights and stormy weather. In this connection, some consideration might be given to using light aluminum or magnesium stacking chairs.

If a projection booth, portable or permanent, is included in the plans, it should be designed for two projectors with ports for each, plus two viewing ports, and should be equipped with a monitor speaker, as well as other booth accessories such as rewind bench and film storage. Conduits for speaker cables should be incorporated into the slab along with electrical outlets, thus eliminating the running of surface wires. Because the slab is flat, sloping theatre seating cannot be arranged, and it should be possible to raise the screen high enough to permit all persons to receive an unobstructed view. The location of the screen and speakers should be determined in advance to eliminate conflict with lighted buildings, street lights or automobile headlights. The all-purpose stage or shell, if wide enough, can shield the screen and its periphery. The screen itself must be braced against sudden winds, and an acceptable substitute for outdoor showings can be produced by painting a sturdy surface, such as a wall or plywood sheet, a flat white.

The open nature of a slab or terrace makes the control of admission difficult so that charging admission to outdoor concerts (where the sound travels anyhow), dances or productions may present problems never completely solvable. The erection of a fence or wall around the slab tall enough to prevent "gate crashers" from entering after dark is apt to prove costly, while detracting from the appearance and atmosphere. Selling tags to be worn in lieu of tickets requires continuous inspection. Free admission to most outdoor events held here appears to be a practical solution to those activities in which the sale of seating is not practical. The latter, combined with ushering and ticket examination, is one rather sure method of admission control.

Creating a surface usable for all purposes points to a smooth, hard, firmly established slab which is impervious to frost, dusting and cracking. A properly troweled and hardened slab, laid with a minimum amount of water, can result in a hard, smooth, long-wearing surface which, if desired, can be colored by the addition of pigmented materials to the top coat. Expansion joints, which must be included to allow for the effect of the heat and cold of the outdoors, may be of metal, as in the Iowa State Union, or asphalt caulking recessed beneath the surface of the slab. The variations governing concrete construction and reinforcement suggest that much care be taken in the building of the slab to prevent its deterioration from climatic conditions. Properly sealed and covered with several layers of deck paint, which is in turn sealed, a cement slab makes a surprisingly good dance floor, and if protected by clean approaches and repainted and sealed from time to time, will prove quite durable.

Facilities for hosing and scrubbing make cleaning the area a relatively simple task, and underground plumbing is desirable. Drinking fountains, properly drained, and trash receptacles may be indicated. A road or drive of some sort should service the stage end of the slab and, if distance from the union's refreshment area makes it seem advisable, provisions for concession booths, with electricity, plumbing, drainage and concrete flooring available, should be made.

Representatives from the civil engineering, buildings and grounds, dance, physical education, dramatic and music departments are among those who should be of assistance in planning the area.

Outdoor Games

The extent to which the games area should be carried is dependent in large degree on what is available elsewhere on the campus. The number of games within the union's province which can be played outside might include badminton, bowling-on-the-green, boccie, croquet, curling, clock golf, horseshoes, shuffleboard, table tennis, giant checkers, deck tennis, roque, quoits and a variety of table games such as chess, checkers or cards. Some of these games require considerable top quality turf (boccie 1,600 square feet for 2 alleys, bowling-on-the-green 16,900 for 8 alleys, clock golf 1,600 for 9 holes, croquet 3,000) and may not be practical in specific union situations. Others may be played on a cement slab or terrace (shuffleboard, deck and table tennis, and table games); while others, such as horseshoes or badminton, can use an ordinary grassy area. Some games, like badminton or deck tennis, may be played on turf or a hard surface. The space and material requirements for such games follow:

Badminton -- Each doubles court is 20 feet by 44 feet. Any level surface 30 feet by 60 feet, which is free of dust and can be marked, may be used. A net 24 feet long and 2-1/2 feet wide divides the court in half and requires posts or standards at least 5 feet, 1 inch high. Badminton rackets and outdoor birds are needed to play the game.

Bowling-on-the-Green -- A perfectly level grass surface, usually tile drained, and somewhat lower than the surrounding ground, is needed. Each alley must be 14 feet by 110 feet, but the green is usually constructed about 120 feet square to permit changing the direction of play in an effort to conserve the turf. A total of 8 alleys is the normal number. Informal bowling may be done on any suitable lawn area. The equipment required is a jack (small ball) and outdoor bowling balls.

Boccie -- Similar to bowling-on-the-green except that it requires less space (8 feet by 62 feet, plus about 9 feet of approaches at either end and 6 feet free room either side), it uses a hard smooth clay surface. The court is bounded by boards protruding from the ground.

Giant Checkers -- A checker board 12 or more feet square surrounded by a walk for players may be painted on any cement slab. Checkers, usually basswood, about a foot in diameter and 4 inches high (kings double height) are shoved about with shuffleboard sticks or with hooked sticks inserted into rings in the tops of the checkers. Outdoor storage of checkers is advisable.

Clock Golf -- Merely a variety of putting, it requires at least a 20-foot diameter circle of putting green turf into the circumference of which 12 stations, corresponding to the numerals on a clock, are marked. A 4-inch diameter putting hole, located off center and moved occasionally to prevent wear, serves as the target. Equipment needed is golf balls and putters. A hole cutter for maintenance may be needed. If more putting green is available (700 square feet), a 9-hole putting course may be laid out.

Croquet -- A smooth grass area about 40 feet by 75 feet is ideal, but may be reduced to 25 by 50 feet. A croquet set -- mallets, balls, stakes and wickets -- is needed for play. Modern croquet requires an area 50 by 95 feet, and carefully designed equipment.

Deck Tennis -- Each doubles court is 18 feet by 40 feet, and any level, dustfree surface 26 by 50 feet capable of being lined will serve. A net 44 feet long and 1-1/2 feet wide divides the court and requires posts at least 4 feet, 8 inches high. A soft rubber ring is used in playing the game.

Horseshoes -- The stakes of men's courts are 40 feet apart, of women's 30 feet. At least 6 feet more at the end of each court should be allowed for safety reasons, and 10-foot-wide pitching lanes marked off. Each iron stake is in the middle of a wooden pitcher's box 6 feet square. This box, sunk flush with the ground, is filled with clay kept at a putty-like condition. Regulation pitching shoes are used in play. Nearly any level stretch of ground may be used.

Quoits -- The stakes, known as hobs or motts, are 54 feet apart, each located in a clay circle 3 feet in diameter and driven down until the head is flush with the clay. Space about 13 feet beyond each hob, and a pitching lane 25 feet wide are needed for safety reasons. Nearly any level stretch of ground may be used. Official quoits are used in play.

Roque -- Much like croquet, it requires a level spot 40 feet by 70 feet, a clay surface similar to a tennis court completely closed by a wooden or concrete border 4 inches high, and blocks set into the clay to hold the arches. Mallets and balls are used.

Shuffleboard -- The courts are 52 feet by 6 feet and require a hard, smooth surface like concrete or terrazzo upon which the courts are painted. Cement ground with a terrazzo grinder, treated with paraffin dissolved in turpentine, and rubbed with powdered wax offers an excellent surface. Pushers or cues and discs are needed for play.

Curling -- One hundred and fourteen feet of smooth ice are needed between tees, with about 18 feet more beyond each and 25 feet of width for each rink. Skating spoils the surface for play. Targets must be painted on the cement surface under the ice.

Table Games -- Nearly any table serves for such games as checkers, chess, cards, Scrabble and the like, although permanent outdoor tables and benches may be located in shady areas and may have checker boards painted or inlaid in them.

Table Tennis -- An area 12 by 20 feet with a level, stable surface and a 5-foot by 9-foot official table, portable or permanent, is needed for each game. The usual rackets and balls are used.

A union operating all such games areas would find itself with a sizable maintenance program in addition to such other problems as staff, budget, equipment and program. Fortunately, most of the official requirements may be modified, uneven terrain used, and several games played in the same area.

Expanding the games area depends to some extent upon the degree of perfection demanded of the various facilities. If all games are to be played on official courts, then considerable room is needed upon which to expand, and this room needs to be level or capable of being filled. If informal recreational activities are the prime goal, then expansion requires less room and is more adaptable. Expansion plans should consider such things as prevailing winds, sun glare, noise, lighting, access and plumbing. Shade trees should be preserved wherever possible, and expansion plans should attempt to keep like facilities together for ease of supervision, maintenance and teaching.

Most of the outdoor games suitable for a union program are flexible enough to permit several of them to be played on the same areas. A cement slab can accommodate badminton, giant checkers, deck tennis, shuffleboard, table tennis and table games. Many of these activities can take place on the same location, although not, of course, simultaneously. Thus, a deck tennis court, painted in a different color, fits inside a badminton court and can use the same net and posts, and informal boccie, bowling and croquet can use the same turf. Badminton and deck tennis can be laid out on grass, or in a parking lot or chained-off delivery area, and a rather unsatisfactory shuffleboard court may be lined off on a sidewalk or other cement or asphalt surface. A slick outdoor dance floor does quite well for shuffleboard or, if it is not painted and sealed for dancing, can be used for many court games.

Net games require uprights of some sort, and a variety of devices may be used to maintain flexibility. Pipes about six feet in height, screwed into cement blocks with cleats at the proper heights, may be moved at will. Threaded inserts, with caps which screw in flush with the surface when the area is not in use, may be set in the concrete to receive matching threaded pipes. Stakes may be driven into the turf. Trees, poles or walls may be used or anchors placed outside the courts to support long cables which may, in turn, be propped up by removable trusses. Permanent uprights severely limit the flexibility of a games area. When lines are staked off in grassed areas, wooden or metal markers should be driven in at the various corners to permit easy relining after the area has been used for some other purpose.

Seating for both spectators and participants is desirable. Portable outdoor benches seating two persons provide such seating without interfering with multiple use of the area. Thus, benches which have been used on the cement slab or greensward may be moved for dancing or a lawn party, and serve as seating for the new event.

Lighting the games area extends its use, and the desirability of such action depends upon such things as climate, kind of facilities, nearness to dormitories or libraries, and competing programs. If the cement games area is to be used for dancing, it must be illuminated. Horseshoe, quoits, shuffleboard and croquet demand relatively little lighting, and illuminating them after dark may be worthwhile, depending upon their popularity. It is a simple enough matter to run a watertight conduit underground to the location during construction, thus permitting a lighting installation later if it is warranted. Automatic controls may be installed which turn the system on as dusk approaches. Moisture-proof units should be used.

A large, level, grassy area serves so many purposes that it seems nearly a necessity. It is attractive and clean, can be used for a large number of games, makes a good spot for serving an outdoor meal or holding a reception or lawn party, and can accommodate a group for an occasional lecture or concert without harm. It is advisable to rotate the use of games areas such as badminton to avoid wear on the turf. Room over and above the playing dimensions should be allowed in most of the games to permit players to retrieve side line shots or to allow for an overthrow or bad bounce. Horseshoe and quoit courts should be well away from walks and protected by landscaping or low fencing to prevent the unwary from walking into the line of throw. Active games like badminton should be clear of all rough spots or projections, and not be attempted on slippery or rough surfaces. The possibility of noise from outdoor activities interfering with classes or studying should be considered in the original layout. Noncorrosive hose bibs attached to buildings or sunk below the ground surface should be provided throughout to permit cleaning, as well as for watering the turf.

Well-maintained grass, neatly painted cement and benches, and groomed courts with proper landscaping, walks and shade trees make the games area an attractive place to use. Growing and maintaining satisfactory turf may be a major problem of the area, and the initial work must be well done. Plantings provide relief from the horizontal lines of a games area, act as dividers, screen off untidy sections, join areas together and contribute to the general appearance. Low, thick hedges make effective barriers around courts. A park-like atmosphere can be created in the games and adjacent areas with some thought and care.

Courts built to official specifications and used with the proper equipment are quite likely to function properly, but modifications thereof may prove less satisfactory, hence care must be exercised that liberties taken preserve the spirit of the game. Shuffleboard on a flagstone terrace or badminton on a court twenty feet long would be better forgotten, but croquet on a gently rolling, asymmetrical court or a rectangular clock golf course can prove satisfactory, since each permits the game to be played normally. Courts should usually face north and south so that players will not be facing the sun, and badminton and table tennis should, if possible, be protected by trees or buildings from the wind, since neither game is feasible if the wind affects the course of the extremely light bird or ball. The grass for bowling and golf must be level and smooth, or these games change character considerably.

While initial costs of properly installing concrete or turf may seem high, a cheap installation resulting in scaling, cracking concrete or dying, spotty turf is more expensive, not only from the standpoint of efficiency of use, but also of maintenance.

Locating the various games areas is dependent upon several factors. If the cement slab used for dancing and similar mass events also serves as a game area, its location should be determined primarily by its service to the many, as the relatively few who play shuffleboard or table tennis, for example, are more adaptable than the larger group. Thus, it is better to locate the slab where dancing and motion pictures are available to all and to let the games participants walk to it, rather than to crowd the slab against the union and limit its size and practicality, merely because it is closer to the union and the issue room.

Courts should be adjacent to each other, rather than end to end, since there is less interference from players, balls, horseshoes and other equipment, fewer barriers are needed, and more efficient lighting and easier maintenance are achieved. The long axis of courts should run north and south to prevent sun interference.

Outdoor game areas which operate efficiently year after year are likely to be the result of proper construction, which in turn is not apt to be inexpensive.

> Plans for the development of any site should include provisions for overall drainage and grading, designed to facilitate the quick drying of all outdoor areas. This is accomplished by (a) sub-soil drainage, (b) surface drainage.
>
> (a) Sub-soil drainage can be effected by either porous subsoil foundations or drain tile. Artificial subsoil drainage should be used only where local soil conditions require it. In regions of severe frost, where paved surfaces are anticipated, natural or artificial subsoil drainage is essential. All subsoil artificial drainage should be installed after rough grading is completed.
>
> (b) Surface drainage on unpaved areas is controlled by grading. In order to facilitate surface drainage of activity areas a good general rule is to limit the slope to 1-3 per cent. Any slope less than 1 per cent is too flat, and any grade in excess of 3 per cent tends to cause erosion. Surface grades on paved areas should be pitched 3/8 to 5/8 of one per cent.
>
> Surfacing: There is no one surface which satisfactorily meets all criteria for all activities: therefore it is necessary to select a surface on the basis of its general use, acceptability and cost. The cost should be considered not only from the standpoint of initial construction but also of future maintenance.

> Types of Surfacing:
>
> Turf: It is generally agreed that grasses are the best ground cover for most field games. Further, large turf areas contribute to the psychological and aesthetic values of the area. Strains of grasses should be selected that thrive in the locality in which they are to be used and that are resistant to intensive usage. It is suggested that the state agricultural college be contacted for information on specific varieties...
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> Cement concrete: It is a material in which hard aggregates of varying gradations are bound together by minute particles of cement, which form adhesive qualities when mixed with water. This type of material is desirable where permanence, durability, and extremely hard surfaces are required. Because mixtures and methods of installing concrete will change with the regions and seasons and because different types of aggregates will vary with local conditions, it is suggested that paving or concrete authorities be consulted.[1]

Backstops in the form of low barriers or logs make the use of horseshoe, quoits, shuffleboard and bowling more efficient. These barriers may be made movable for use on multipurpose areas. Strategically placed drinking fountains save time for participants. Efficient and economical maintenance is dependent largely upon the original planning.

> Unless the area is designed and constructed so as to facilitate upkeep, excessive maintenance costs or unsatisfactory conditions are likely to result. Selection and location of plant materials, types of surfacing, adequacy of water outlets and connections, relationship of features requiring similar care, adequacy of drainage and building layout and materials are only a few factors which influence the problem of maintenance. Much saving in labor costs can be achieved through attention to apparently minor details in the design and construction of an area. For example, if walls, curbs, flagpoles, bases, concrete sandboxes and other features that border a turf area or are to be erected on one are designed with a 3-inch shoulder flush with the ground, a mower can travel over it and the need for trimming grass by hand will be avoided.[2]

Equipment such as rackets, paddles, horseshoes and balls must be issued. While an area with a large number of courts and games might require and be able to afford its own storeroom and equipment dispensing service, most unions cannot furnish such a separate service throughout its long span of operating hours. There seems little reason why they should if the games room control desk and storage room are designed to serve the outdoor area. Rackets, bowls, croquet sets, putters, horseshoes and the rest of the equipment, and even nets may be easily carried to the playing surface. Keys to the giant checker lockers may be dispensed at the same place, and a set of light controls for the illumination of the games area may be included there. If the control desk is several flights of stairs away from the games area, it may discourage play, and it may be that some other spot such as a stock room, outing club headquarters or information desk can be utilized. Peg racks for rackets and paddles, putters and horseshoes, channels for balls, shelves for birds, cards and board games, and portable racks for croquet are among the storage arrangements that should be made.

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[1] Participants in National Facilities Conference, A Guide for Planning Facilities for Athletics, Recreation, Physical and Health Education (Chicago: Athletic Institute, 1947), pp. 27, 28.

[2] George D. Butler, Recreation Areas, Their Design and Equipment (New York: A. S. Barnes and Co., 1947), p. 18.

Turf experts, usually on the faculties of state colleges, civil engineers, and physical education professors are among the persons who should be able to make contributions in planning the games area.

Sun Decks

Sun bathing may be indulged in almost anywhere outdoors when the sun shines. The question of propriety, of course, limits the range of places, so that sunning on a terrace being used for eating or a concert is not likely to prove acceptable to most unions. Because of this attitude, and despite the fact that beaches are crowded with sun bathers during the summer, sun decks should probably provide some degree of seclusion.

The need for sun decks varies with institutions. An urban university might offer no other opportunity for sun bathing, while one in the country or near a beach might be surrounded by excellent natural facilities. The percentage of day students, number of fraternity and sorority living units, climate, atmosphere and other sunning areas are some of the additional items which might be weighed in considering the establishment of sun decks.

Basically, an area exposed to the sun which is clear of smoke and other atmospheric contamination, such as cooking or industrial odors, suffices. Duck boards, chairs, chaise lounges, blankets, towels, sheets or other surfaces may be provided, or bathers be asked to bring their own. For sanitary reasons bathers should not use common reclining covers, such as duck boards or blankets, unless they are protected by sheets or towels. Lockers or clothes hangers should be accessible to bathers, with the usual precautions taken for checking valuables. Showers, towels and soap may also be available for bathers.

Roofs often make good sun decks and provide a considerable degree of privacy. However, they should be designed for such a purpose, with easy access, strong supports and protected surface, and with whatever other services, such as lockers or showers which may be needed, nearby. Sun bathing areas on coeducational campuses should probably be separate.

Picnic Areas

Outdoor cooking and eating on the grounds of the union building may be done on either a small or a large scale. A few fireplaces, picnic tables and benches, rubbish cans and some wood, located in a grove or grassy spot near the union building, are all that is needed for one or several students to hold a cookout. A lake or stream may add to the attractiveness of the spot. The union food service may be available at the games control, outing headquarters or other location. By the same token, conventions and other large groups might be served chicken barbecues or steak fries if large enough pits are installed, and serving and eating room are made available in the original planning. Because conferences and similar meetings often occur before and after summer sessions, they may sometimes spread over the whole outdoor area without interfering with the usual patrons who are absent from the campus.

Integration of Outdoor Areas

It may help planners if they consider the outdoor areas as extensions of the union building and really an integral part of it. Tables on a terrace used for eating require cleaning just as much as those inside. Games and other equipment must be handled; the multiple-use slab involves many of the problems met in using the flexible lounge and meeting space. The usefulness and attractiveness of the whole tract is as dependent upon maintenance as the interior of the building.

Some activities inside the building quite naturally overflow to its exterior. Coffee and soft drinks from the fountain move easily to the adjoining terrace, reading and conversation from a lounge to a terrace, and dancing from the ballroom to a terrace, hence such terraces logically should adjoin these areas, and they may be roofs of adjoining wings rather than at ground level. The outdoor concrete slab designed for its own dances (as opposed to the warm weather overflow from inside) need not adjoin the building, but it may do so and serve as a lounging or food terrace as well, with its far end being used for games.

The parking lot should be near a main entrance of the building and be connected to it by broad walks. If it adjoins the outdoor slab, crowds attending mass events such as dances present little interference with other areas, but the orientation and landscaping of the slab should be such that headlights and noise do not interfere with concerts, motion pictures and similar programs.

The grass areas usually should not be near the parking lot or main walks, since foot traffic on them, particularly during wet weather, can prove damaging. The relative position of the various games is not important except that horseshoes and quoits should be together and isolated somewhat from the others for safety reasons. Definite walks should run through the games areas to keep traffic off the turf and to prevent interference with the games. Barriers of plantings or low fences should be used to protect the courts wherever necessary. There is some value to having the games area visible from a lounge or food terrace since it may induce watchers to participate, thereby introducing some to new activities. A picnic area near the parking lot expedites the carrying of food and equipment, and its proximity to the games area as well provides activity before and after eating.

If an ideal plan is possible, one union plot layout which would meet most of the requirements for a successful outdoor area would find the union building approached by broad walks and a driveway. The walks would lead to the various entrances from the main sources of pedestrian traffic. The drive would pass a main entrance where passengers could alight, and would rejoin the street. A side driveway would lead into the parking lot, from which drivers and passengers could enter the building easily. Several exits from this lot would be provided so that drivers returning to the building to pick up passengers did not interfere with those dropping theirs off. (One way traffic may be desirable in the driveway.) The parking lot would be located on one side of the building. The back of the building would be graced by a large terrace adjacent to the refreshment area and overlooking a large cement slab. The slab would be about twenty yards from the terrace, have a modified music shell at its far end and be surrounded by broad walks and grass. The picnic grove would be on the parking lot side of the slab near the shell and beyond the parking lot, whose location and plantings prevent headlights and noises from interfering with the shell's activities. On the other side of the slab from the picnic grove and parking lot would be a long grass plot for games. The quieter games -- clock golf, bowling and croquet -- would be near the building, with badminton and deck tennis closer to the shell, and horseshoes and quoits, separate from the others, near the shell. Badminton, deck tennis and shuffleboard courts would be painted on the end of the slab away from the shell, and table tennis would be available on the slab. Other table games could be played on the terrace. None of the areas would be close enough to the building to interfere with its expansion, and each can grow into adjacent vacant space. The soda fountain and grillroom, the game room and the outing club headquarters are all on the ground level so that the outdoor space is really an extension of these areas.

Probably only a brand new college could meet all these requirements and still locate its union building near the center of campus activity, but advance planning can do much to attain a well-integrated union, inside and out.

MISCELLANEOUS AREAS

Ballroom

Flexibility -- The ballroom, as previously noted in the section on Food Areàs, often doubles as a banquet room and frequently serves as an exhibition hall, theatre-in-the-round and assembly room, housing such diverse events as receptions, bridge and table tennis tournaments, art and photography exhibits, variety and fashion shows, motion pictures, group singing, carnivals, concerts, smokers, forums or discussions, lectures, stage productions, conventions, or fencing. In many instances events are held in the ballroom because of the space if offers rather than because of its suitability, so that it is, in effect, a substitute for a theatre, or art gallery, or gymnasium or auditorium. Thus, when planning a union building it should be remembered that, while the flexibility of a ballroom is high, its flat floor, decor, lighting, and layout mean that it always will be merely a substitute for a pitched floor theatre or an assembly hall and it should not be permitted to eliminate such a facility. With this limitation in mind the ballroom can be planned to meet as many requirements as possible, providing it fulfills its prime purpose -- dancing -- and its secondary purpose (if desired), dining.

College dances may range from those attended by a few couples dancing to records, to hundreds or thousands dancing to "name" bands. The union building cannot accommodate all the campus dances, nor can a ballroom handle all the dances to be held in the union building. Meeting rooms and dining spaces such as the grillroom can be used for small dances, but still the great variance in size of dances makes it desirable to have a ballroom of flexible size. Fifty couples dancing in a room large enough for five hundred is inefficient in terms of maintenance, to say nothing of its tendency to affect adversely the psychology of the dance.

Sliding walls separating segments of the ballroom often are used to provide expansibility, with T-or L-shaped segments popular. In this way each segment may be used independently with little interference from each other encountered when stages or head tables are located at the extremes of the segments. When used together the segments provide easy circulation, and an orchestra or head table located at the intersection of the segments is visible and audible to all parts of the floor. Independent entrances, service access, lighting, public-address systems and storage space are needed for each segment.

The addition of a new wing seems to be the only practical way to acquire as much space as is needed by an expanding ballroom, and the original plan should take such a measure into consideration. Expansion by adding a leg of a T, as accomplished at Purdue, appears to be one logical means of growing.

The ballroom of the North Carolina State College Union affords an excellent example of a flexible, functional facility.

> The Ballroom, which is located on the east end of the first floor, will accommodate fourteen hundred couples for dancing, will seat five hundred and fifty for a banquet and seven hundred for a concert. The main Ballroom may be enlarged into five larger areas which are adjacent to the Ballroom if an event is large enough to merit the additional space. This flexible dance and reception area includes a variety of colored lights,

> which wash the walls of the Ballroom from the ceiling, and give the facility a "hundred personalities." The Ballroom stage may be extended out to accommodate a large orchestra. The extension of the stage may be used in the center of the Ballroom for theatre-in-the-round. Sliding doors at the north end of the Ballroom makes it possible to freely move from the inside to the out-of-doors. There are eight speakers in the ceiling of the Ballroom which respond to the microphone on the stage. There is also a TV outlet which will be used when there are programs of unusual interest.[1]

Portable equipment adds to the flexibility of the ballroom. Folding tables, chairs, screens, platforms and risers permit a variety of uses and arrangements. Portable bleacher-type seating with backs may be desired for arena productions. Storage for such equipment should be on hand trucks. The understage space often serves as storage for such items, but additional storage may be needed. A maintenance area for storage of supplies and equipment used on the wood floor may also be indicated. A rule of thumb indicates that 10 per cent of the ballroom area should be devoted to storage space.

Functionality -- Microphone and electric outlets should be well distributed about the ballroom, and thought should be given to the location of motion-picture screens and projectors, as well as to the possibility of a built-in booth. Consideration of such items as length of throw of the projector, darkening of the room, conduit for speaker cables, and control of house lights can make the use of motion pictures more satisfactory. The more the ballroom approaches a theatre, the more thought should be devoted to these functions. Dressing rooms, large wings, crossing room, set storage, a fly loft, are among the many desirables that are useful if variety shows, concerts or dramatic productions are to be presented in the ballroom.

The decoration policy should be determined before the building plans are completed. If the original decor, assisted by a flexible lighting system, is to provide the dancing environment, then the problem is simplified. However, if groups are to be permitted to decorate the hall with paper streamers, cut-outs, banners and myriad other items from barnyard animals to heavy military equipment which college students are prone to use, special arrangements for eyes or grommets, and nailing or tacking strips in the walls and ceilings ease the decoration task while preventing the defacement of the hall by staples, thumbtacks, nails, cellulose tape and similar articles affixed haphazardly about the room.

A smoking lounge should be located near the ballroom as smoking is not usually advisable on the dance floor itself for reasons of etiquette, maintenance and safety. If an outdoor terrace or roof adjoins the ballroom, the danger provided by cigarette butts snapped into leaves or bushes should be remembered. All decorations within the ballroom, such as draperies, should be fire-retardant or fireproof, and enough exits available to permit a quick and orderly exodus of a capacity crowd.

Hardwood floors, properly sealed and waxed, seem to offer the best multipurpose surface, with dance wax or borax sprinkled about to obtain the additional slipperiness needed for dancing. Floors slippery enough for dancing present safety hazards for other uses, hence the need for a non-slip surface which can be converted easily to dancing. Forced ventilation or air-conditioning is definitely needed to remove the heat generated by the large crowds which use the ballroom, particularly during dances.

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[1] Undated brochure, entitled The North Carolina State College Union, p. 2.

Appearance -- The size of ballrooms and their highly finished floors usually demand and receive a simple, dignified treatment. Color is subdued, perhaps to prevent the clashing of decor with gowns. Colored lights, properly planned, afford infinite combinations of colors and intensities. The many differing uses of the ballroom usually dictate the conservative approach to its decoration.

Economy and Efficiency -- The location of the ballroom presents something of a dilemma. Unlike the game room, lounges or food areas, its use is apt to be limited to a relatively few hours per week, hence its location on a ground or first floor level may mean that busier areas may have to be placed in less convenient places. Nevertheless, the large numbers of people who use the facility at one time mean concentrated traffic. If it serves also as a banquet hall, other reasons exist for its location on the lower levels. Should the ballroom be located above the main level, elevators are indicated to eliminate accidents.

Rest rooms should be near the ballroom, perhaps adjacent to the smoking lounge. The ladies' room needs large mirrors, some full length, dressing benches, facilities for a matron, and a divan or two for resting. Dressing rooms for orchestras, singers and other performers should be available.

The banquet pantry, if included, must be located to serve the various segments of the hall as well as the whole, and should adhere to the principles outlined in the section on Food Areas. Its size depends upon its nearness to the kitchens and, of course, the contemplated menu, but comparable installations in hotels indicate that as much as 22 per cent of the ballroom space should be devoted to the pantry.

Television Room

As previously indicated, the place of television in the union building and program has not as yet achieved any particular niche. It does present a maintenance problem, since viewers are rough on furniture. The policies regarding television -- staff or committee versus viewer control, special program use only, large set and large room versus small quarters and small equipment, several small sets -- should be predetermined insofar as this is possible.

The relation of the union building to television reception does much to determine the application of television. Obviously, a campus near one or more stations finds more use for television than one located in a fringe area. The need for complicated antennae is lessened if reception is good, and the flexibility of television is increased thereby, as nearly any room or spot with a source of electricity can be used as temporary headquarters for a set.

Conduits running from the television antenna to all likely points of use make for flexibility in the use of television since, with electric outlets adjacent, a set may be moved, plugged in and operated within minutes. Such an arrangement makes it possible to expand to meet sudden increases in interest, or to handle special events such as sporting or political programs.

Platforms for elevating sets may be considered desirable to permit more viewers than would normally be expected to watch a home set. Tall, institutional sets on casters or wheels may be indicated, and the latest developments in projection-type sets should be investigated prior to any purchase. The screens of elevated sets should be tilted downward to eliminate the craning of necks. If recessed, the set should be accessible for repairs and ventilated to permit heat loss. Some electrical shock hazard exists, and the set should be enclosed for safety as well as esthetic reasons.

If, as seems desirable, a room is to serve primarily as a television lounge, it should be possible to lower the lighting level in it and eliminate all bright lights, such as sunny windows. Soundproofing is desirable to prevent the transfer of noise to other areas. Sturdy lounge furniture and plenty of ash stands are indicated. Most of the viewers should be seated within a 60-degree viewing angle, and 18 to 20 people are about capacity for a 20-inch picture tube. A long narrow room lends itself to such seating better than a wide shallow one, although locating the set in a corner of a wide room enlarges the audience possibilities. Multiple speakers may be built into the room to provide proper hearing throughout. An example of the varied uses of television in a union building is rendered at the University of Iowa, a description of which follows:

> The Iowa Memorial Union has equipped two rooms for television, to accommodate the two channels currently available in the Iowa City area, WOC and WHBF.
>
> One is equipped as a TV theatre -- a 20" console set in a stage setting with 100 chairs for the audience. The other is arranged and furnished as a TV lounge, described by a Philco official as "the most nearly perfect solution of public TV-viewing I have seen."
>
> The design and decorations of the lounge add to its effectiveness. The ceiling was dropped and JM acoustical tile was installed. Recessed lighting controlled by a rheostat, and 8 TV speakers are installed above the ceiling tile. Two 20" console sets are placed on opposite sides of the room. The furnishings consist of 62 upholstered seats (swivel TV chairs, 2-passenger love seats, and curved sectionals) and are so arranged that every person in the room can view one of the two sets from a comfortable distance.
>
> The lounge is occupied to capacity several times weekly, to over capacity for special events (World Series, Rose Bowl activities, pro athletic events, speeches by famous persons, etc.), and is used by 20 or more persons each day from 5 p.m. until 10:20 p.m. The television theatre is open to the public from 8 a.m. until closing time at night.
>
> For events of special interest, two 20" portable sets are placed in the main lounge with as many folding chairs as is practical in front of and around them. The audience viewing the World Series was estimated at 800 daily.
>
> The technical set-up consists of one high antenna, with power boosters for each channel, a co-axial cable running from its base to a series of jerald boxes in the Union, and lead wires from these to the various TV receivers. An indefinite number of television sets may be operated in the present Union and in a proposed addition.
>
> In spite of the fact that Iowa City is in the outer periphery of a "fringe" area, 60 miles distant from the nearest transmitter, reception is dependable and varies from fair to excellent, depending on weather, interference, and other factors.
>
> It is anticipated that transmitting stations will be located in Cedar Rapids, 26 miles away, and in Iowa City in the not far distant future. Television in the Union will then be greatly improved. But it is unqualifiedly popular today.[1]

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[1] "Iowa Solves the TV Problem, and Students Like It," The Bulletin of the Association of College Unions, XX (March, 1952), p. 8.

Outing Organization Room

The outing organization may be a separate organization,or a union committee or affiliate. It may or may not require its own offices, as the student activities area and meeting rooms are quite likely to be sufficient for its needs. Storage is needed for such a possible variety of items as skiis, bicycles, climbing equipment, cooking kits, tents, packs, sleeping bags, axes and other tools, canoes, paddles and sails. Work space for the waxing of skis, repair and painting of bicycles and canoes, dubbing of leather equipment, sharpening of tools and mending of sails must be provided,and some drying space for wet articles be included. The location of the college does much to determine the equipment to be used; articles like skiis in the south or surf boards in the mid-west seldom prove necessary. Doors and passageways must be large enough to admit canoes or boats,or other large pieces. Some control over issuing and collecting gear is needed, whether it be a counter, dutch door or other arrangement,and some method of record keeping installed to assure return. Obviously, if boats or bicycles or similar equipment are either stored in or used from the outing rooms, a ground floor location is to be desired with direct opening to the exterior. Location of the rooms adjacent to the outdoor areas, as at Washington State College, may permit the issuing of games equipment like shuffleboard and horseshoes therefrom. Other unions may find it more feasible to incorporate the outing facilities with their game room or hobby shop control.

INTEGRATION OF AREAS

Some union facilities must be located on the street level; others operate most efficiently on other levels. An examination of preceding portions of this work reveals that there are strong reasons for placing food services, information center, bookstore, ticket offices, ballroom and administrative offices on the ground floor, while other areas such as publication offices or student activity offices may be in less accessible locations. Guest rooms, which receive relatively little traffic and function better in quiet, fit nicely into higher floors and more remote wings. Putting the various elements of a union building together so that each fulfills its own function while complementing that of the others is nearly certain to demand compromises. Realism may dictate that such revenue-producing facilities as a bookstore or soda fountain take precedence in location over a music room or browsing library, even though it may be educationally desirable to expose, at least by propinquity, those entering the building to the latter rather than the former. Traffic to the most popular areas of the union building should not be so directed that it causes great crowds of people to throng its passages and stairways to the disturbance of other sections, and to the detriment of building maintenance. Some seldom-used facilities, such as a ballroom or hobby shop, may finally be placed on the top floor because there is no room elsewhere for them.

Segregation by Function

Whenever practical, areas should be separated by function, as previously described in the section on game rooms, where supervision, instruction and equipment control for all were made possible. Such areas may assist others in their functions when properly located and so, while complete in themselves, can nevertheless help and be helped by others. Thus, a self-contained game area receives players from a nearby coffee shop,and the presence of such a shop induces gamesters to stop for refreshments when leaving. It is to be hoped that persons walking by a corridor case containing a craft display might be interested in utilizing the out-of-the-way hobby shop.

Some principles in combining the elements of the union building into an entity are elementary. The games area is noisy and should not be next to sleeping rooms or private dining or meeting rooms. Kitchens demand considerable delivery, removal.and storage, hence they should be near driveways, storerooms and receiving spaces. The information center should be near the main entrance. The theatre should have its own exits and entrance, and is probably best situated in its own wing. Similar or related activities may suggest combinations such as the ballroom-banquet room or theatre-radio station. The browsing, music and art rooms can be worked into a unit which is serviced and supervised by one central control or which, at least during rest periods or emergencies, can be satisfactorily administered by one person.

The kitchen should connect with the ballroom and with certain of the lounges and meeting rooms, even if only by conveyors or elevators, to provide adequate service for receptions, coffee hours, intermission refreshments and, possibly, banquets. Thus, those areas served by the kitchen, but not on the same level, must be vertically aligned with it, if they are to be serviced by a dumbwaiter.

Public Spaces

So far, then, the food areas are best located largely on the ground level with the games rooms not too remote from the refreshment area, and with some meeting rooms and lounges directly above the kitchen. The theatre crowds at intermission may use the refreshment service if it is not too far distant, hence this wing, which offers some meeting space while sometimes needing additional reception and rehearsal room, might well adjoin the food-meeting room section. A review of this portion of the building so far reveals it to be a busy place with many persons using it for eating, meeting and theatre work. Service facilities, such as coat rooms, toilets and public telephones are needed, and multipurpose lounges prove valuable. If the costume and stage shops are to have any connections with the hobby shops the latter must be included in this section of the building. By the same token, if the darkroom facilities are to be used by the campus publications, these offices might well be located here.

Reception Center

The main entrance, lobby and information desk go together. In some union buildings the information center includes ticket, cigarette and other sales, a lost and found service and, possibly, some office functions. Smaller unions combine this center with an administrative office, and even make it the issuing and supervising center for the music and browsing rooms. Many unions may wish to place a large lounge for receptions next to the main entrance. Coat rooms should adjoin this area, and toilets be near by.

Administrative Spaces

If the advantages of adjoining offices outweigh those of decentralized offices, an administrative suite can be planned wherein equipment and personnel can be used with flexibility. Some office space is needed in the various departments but can be reduced if centralization is adopted. Should decentralized offices be used, the social director might well be housed in the student activities section where the various student government organizations, union committees and publications hold forth. In this way communication among the various groups and with the social director is improved, and a relatively quiet group of activities kept together. If decentralization of offices is adopted, other offices besides the social director's can serve double duty. The business office near the food or bookstore area can offer closer supervision and emergency assistance. A maintenance superintendent's office near the maintenance shop, or a reservation office near the information center can provide bonuses in the form of added service.

Quiet Areas

The quiet areas, logically enough, occur away from the noisier, highly trafficked ones. Offices, conference and meeting rooms, art, music, browsing rooms and lounges go well together, but cannot entirely be separated from the noisier sections. Meeting rooms with their periodic traffic introduce some noise to an otherwise quiet facility, particularly when larger rooms are in use, and it may be that larger meeting rooms and lounges fit into the noisier section, which includes the food services, while smaller meeting rooms and lounges and conference rooms are combined in a quiet section which embraces offices and other less noisy facilities. While outside noise can interfere with the music room, the considerable amount of sound which originates therein makes the music room a most unlikely component of a quiet area unless it is well soundproofed.

By and large, the quiet areas of the building present most of the demands for late or vacation time operation. Guest rooms and administrative and publications offices are quite likely to function late at night or during the Christmas or summer vacations, and locating these together with separate access permits their use after the union's normal operating hours. With this in mind it may seem advisable to place the campus radio station alongside the various student offices. Separate use of other areas of the building should also be considered in laying out the floor plans.

In bringing the various elements of the union building together into a floor plan, the planning committee and the architect are confronted with seemingly innumerable problems. The site chosen might slope so that locating the food services and delivery areas on the first floor on one side of the building may place them on the third floor on the other. Compromises on space allocations and assignments must be made. Pet projects may be deleted and substitutions accepted. Nevertheless, persistent work and fresh approaches should produce a satisfactory union building, granted sufficient site and budget provisions. Basically, the complete union building consists of what might be called "public spaces," such as the food and games areas which are used more or less continually by many individuals and which produce revenue; a reception center, consisting of a lobby, information center and, perhaps, a lounge; administrative spaces; quiet area; a noisier area; a theatre area; a shop area and an outdoor area. The "public spaces" should be quickly and easily accessible to encourage usage, produce revenue and lessen maintenance problems. The reception center obviously belongs at the main entrance. Some administrative spaces are located with their respective areas, others in the quiet area. The "noisy" area is located in proximity to the food services, thus more or less determining the position of the quiet area. The theatre is a wing near the food services. The shop may be in or next to the theatre wing or located elsewhere in the building, but not in or near the quiet spaces. The outdoor areas surround the building as previously described.

The foregoing is probably honored by its breach as often as by its observance, and certainly inflexible preconvictions make it difficult to lay out the floor plans to meet the individual situation. Merit does exist for consideration of the segregation by function idea, but local requirements can certainly dictate departures from the basic interrelationship concepts.

Key System

The relationship between areas and their methods of operation should be anticipated as closely as possible. The question of a key system illustrates the interdependence of the various areas. Modern key systems permit mastering and submastering to meet nearly any requirements. Thus it is possible for the union director and other members of the staff so designated to have a master key which opens every lock in the building, except for such miscellaneous items as desks and prebuilt cabinets, and even these can be placed on a master system at considerable expense. Submasters for the various areas such as bookstore, food or shop may be distributed to department heads, and each of these submasters may be further divided so that storage rooms or refrigerators cannot be opened by those with keys to work spaces. Janitors closets may be keyed alike so that one key opens all of them, and it can be so arranged that janitors' keys open meeting rooms and similar areas but not storage spaces or private offices. A meticulously designed key system with a central control aids immensely in the daily operation of the building, while removing the tendency for master keys to be in rather general circulation. If a campus-wide key system is in operation, the union building might be integrated with it.

CHAPTER IV

TRANSLATION OF PLANNING

ARCHITECTURAL SERVICES

The standard agreement issued by the American Institute of Architects states the architect's professional services to be rendered

> consist of the necessary conferences, the preparation of preliminary studies, working drawings, specifications, large scale and full size detail drawings, for architectural, structural, plumbing, heating, electrical and other mechanical work; assistance in the drafting of forms of proposals and contracts; the issuance of certificates of payment; the keeping of accounts, the general administration of the business and supervision of the work.[1]

An examination of the foregoing reveals that the architect is the person who is responsible for the technical preparation of the union building. The dreams of the planning committee are transmitted to him,and it is the job of the committee to convey all that it wants in terms of function. It should describe the purpose of the building and how it is to be met. Any specific ideas which it may have in the way of layout, equipment or materials should be passed on to the architect for his study. The architect should be brought into the committee's work early, shortly after it knows what it wishes the building to do and what it thinks it should include to get these things done. The architect should not be expected to sit in on the inexhaustible number of meetings which the committee may hold, but he should be consulted at varying stages and be available whenever the need for his services is felt. The architect who wishes to make a significant contribution deserves the opportunity to participate in these early discussions which determine the character of the building.

Consultants

Both the committee and the architect may profit from the assistance of the various consultants who may be called in. The Association of College Unions maintains a consulting service which makes available experts in union building planning and operation. Consulting architects who have a number of union buildings to their credit,and program experts are both available for consultation. These experts, familiar with union problems over a period of many years, can offer much to committees and architects alike, each of whom is undoubtedly embarked upon its first union project. Information concerning such consultants may be obtained from the Association headquarters at Willard Straight Hall, Cornell University. The Association also maintains for use by those contemplating construction a file of names and addresses of architects who have built union buildings.

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[1] American Institute of Architects, The Standard Form of Agreement Between Owner and Architect (Washington, D. C.: American Institute of Architects), p. 2.

Specialized areas in the union building may demand special consultants. A large food service department, hotel facility, bookstore or theatre may demand attention more expert than that which can be furnished by the architect or the committee. Vendors, particularly of food equipment, often can provide assistance but, since their primary interest is in selling equipment, their plans may tend to serve their own welfare first. The consultant is usually retained by the university, but should work closely with both the planning committee and the architect.

Selection of Architect

Selecting the architect may be prescribed by the institution's rules and policies. Many state universities are compelled by law to use the services of a state-appointed architect. Some institutions may have one firm do all their work, others may favor competitions, still others have no policy at all. Membership in the American Institute of Architects and the holding of an architect's license are at least minimum assurance of ability and integrity. Selection of an architect should be based on reputation, experience, resources (in terms of architects, engineers, designers, draftsmen, construction superintendents, specification writers, office workers and the like), visits to completed buildings and references from former clients. If structural, mechanical or electrical engineering is done outside the firm, the names of such engineers should be obtained and their competence investigated. The personality of the architect who is working with the committee should merit some consideration since he may need rare patience and insight during the period of "the necessary conferences."

Preliminary Drawings

The standard agreement form states that the architect shall prepare preliminary studies and working drawings. The preliminary drawings should represent the committee's most mature thinking. Its ideas, brought together for integration in blueprints, perhaps with a model, have blossomed, and the stern eye of reality must be brought to bear on the results. Square and cubic feet become meaningful in terms of cost and space. The relationships between areas can be visualized and obvious errors eliminated.

Assignment of Authority

When both the architect and the owner are corporate bodies rather than individuals, the problem of maintaining a relationship is somewhat more difficult than that encountered when each is an individual, and this problem grows as contractors and subcontractors enter the picture. It is most helpful if representatives are appointed from both the architectural firm and the university, each with a definite amount of authority, and each assigned to act until the project is completed. The architect's representative should be an architect, and it is he who ideally initiates the project, prepares the preliminary drawings and acts as liaison between the owner's representative and the contractor, approves payments, and recommends final acceptance of the building. The owner's representative ideally is the person most interested professionally in the building. Ideally, this person is the future director who has enough time to work with the architect and (later) the clerk-of-the-works, the contractor and the building committee (or whatever other group or persons to whom he may be responsible).

According to the same A. I. A. agreement the owner shall

> furnish the architect with the following information: A complete and accurate survey of the building site, giving the grades and lines of streets, pavements and adjoining properties; the rights, easements,

> boundaries and contours of the building site, and full information as to sewer, water, gas and electrical service. The Owner is to pay for borings or test pits and for chemical, mechanical, or other tests when required.[1]

The owner's representative must have the authority and budget to secure the foregoing information from the appropriate campus or other sources, and should have ready access to such campus specialists as the college engineers, landscape experts, decorators or purchasing agents whenever he feels need for their assistance during the project.

Site

The foregoing statement implies that a building site has been selected. It is to be hoped that the site is not located in some remote corner of the campus, but rather near its heart and astride main foot-traffic lanes.

The site determines much of the building's character. Esthetically, the building should match its surroundings. Its interiors, entrances, service drives, windows and grounds may depend upon the site. Room should be available for expansion. The possibility of ledge rock or water should be explored. The committee must have the authority and the budget to obtain the information needed concerning physical and legal matters of the site as well as utility and other services. Room for expansion and outdoor facilities, including parking, should be available. Proximity to housing units is desirable. Perhaps ideal would be a union site half way between the housing area and classroom area, and on the main traffic lines between each.

Working Drawings

With preliminary drawings and lists of specifications prepared, the architect is able to submit preliminary cost estimates. He does not guarantee such estimates but they do serve as a basis for seeking funds or for altering the rough plans as dictated by a budget figure. At this juncture such major aspects of the building as its location, floor plan, type of structure, equipment, utilities and service, and size should be agreed upon, as later variations in them can prove costly.

Following the approval of the preliminary plans, the architect proceeds to complete working drawings, specifications and detailed drawings for the project. During this stage the owner's representative and the architect should maintain a close liaison since, regardless of the excellence of the communication which has existed between the two, questions arise regarding consultation. The owner's representative should satisfy himself that the desires of the committee actually are being fulfilled by the draftsmen who are placing the plans on paper. At this time he should be able to call on the institution's experts for advice in such technical matters as plumbing, electricity, heating or hardware, should this seem desirable. Such details as door and window frames, light fixtures, hardware, trim, clocks, sinks and entrances require careful attention. They do much to affect the appearance and functioning of the building and should be subject to approval, either by sample, photograph or drawing. Agreement at this level saves misunderstandings later on, and such agreements, confirmed in writing, eliminate disappointments. If the owner obtains descriptions or photographs of equipment which appear in the specifications only as catalog numbers, he and the architect can eliminate much of the misunderstanding which so often surrounds a construction project. Naturally, the owner's representative must not encroach upon the architect's province and should avail himself to the utmost of his expert advice and services. Nevertheless, it is his building for which he is paying and he has the right and duty to know what it is proposed to include in it.

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[1] Ibid., p. 2.

Completion of the working drawings and specifications call for approval by the owner prior to the advertising for bids and awarding of the contract. The committee may wish to examine all drawings and specifications, but the chances are that few committee members possess the time and ability for this, and the owner's representative, perhaps with some expert university assistance, probably does this. If he has maintained contact with the architects during the drafting and specifications writing stage, he should be able to approve the project.

Bidding

The architect is prepared to assist the owner in preparing bid forms, in selecting those invited to join in the bidding, if advertised open bidding is not the procedure adopted, and in awarding bids. His assistance is of great value in recommending contractors and subcontractors because of his unique position to ascertain the ability, integrity and resources of persons engaged in the building field. The architect is as concerned as the owner in obtaining competent contractors with whom to work, since his time, services and reputation are involved, but, as he usually is paid a percentage of the total building cost, he is not as prone to be as price conscious as the owner. Mutual recognition of this situation should enable the architects and the owner to agree on a contractor or contractors. At this time the architect's assistance in arranging for contracts, performance and other bonds, insurance and a completion schedule is an important part of his services.

Supervision of Construction

Considerable misunderstanding exists concerning the amount of work supervision rendered by the architect. Unless specific arrangements involving additional payments are made, the architect provides only general supervision to guard "against defects and deficiencies in the work of contractors." Continuous inspection on the site is made by a clerk-of-the-works who is an employee of the owner, but selected usually by the architect. On projects of any size the salary of a competent clerk-of-the-works is a small price to pay to assure the performance of the contract. The liaison which can be established by the clerk-of-the-works between the architect, who may be engaged in several other projects, and the owner's representative, who undoubtedly has responsibilities which frequently require his presence at places other than the building site, can do much to assure that the transformation of plans from paper to reality proceeds as originally visualized. Errors in drafting or interpretation, of commission or omission, are inevitable, and the earlier discovered the more easily rectified. With a clerk-of-the-works available to both the architect and the owner, the transmission of information is simplified.

Special Services

The relationship of the architect with such specialists as heating, electrical, structural and mechanical engineers, interior decorators, kitchen or laboratory experts should be clearly understood. Some architectural firms are prepared to offer all such services, others retain the services of other firms. The owner should be satisfied that any engineering or other specialized assistance to be rendered is as acceptable as that expected of the architect. If interior decorating, furnishings or equipment are not part of the architect's services, he should nevertheless be familiar with the proposals to ensure a unity throughout the project. Obviously, the reverse is true for those providing the decoration, furniture or equipment.

Field Changes

If the owner is to avail himself to the utmost of the architect's services, he ascertains that all transactions with the contractors are carried out through the architect. In theory, even the slightest departure from drawings or specifications should be made only with the architect's consent and upon his order. While this may prove unworkable at times and the advice of the clerk-of-the-works, contractor or university expert may indicate, for example, that immediate changes are desirable or necessary to expedite construction during a period of unavailability of the architect, the authorization of such changes by the owner is a dubious method of procedure. Requests for such changes should be viewed critically, although the owner may have to decide that the position of an electric service outlet or sink or counter should be changed. Because, presumably, much thought preceded the establishment of such locations, snap decisions under pressure and without the benefit of the architect's advice may counteract the time spent in earlier deliberations.

The complications of modern construction make field changes a foregone conclusion. While such changes may result in occasional credits, they are more likely to add to the building cost. The owner should insist that he be informed in writing of such changes, of the changes in cost involved, and that he receive print revisions should they be required. His consent to such changes should be written, if possible, and verbal consent confirmed in writing. The multiplicity of details and possibilities of misunderstandings are so numerous that complete records of all transactions should be maintained by the architect, contractor, owner and clerk-of-the-works. A contingency fund to permit changes during construction is desirable, but the owner should be wary of extra work since such extras are often costly.

Payments

The architect authorizes payments as the work proceeds, such authorization indicating his approval of the project construction to date. The final payment should not be authorized until the structure is deemed satisfactory and accepted by the owner. Prior to acceptance, the owner and the architect should work together to ascertain that the whole structure is acceptable, including all services and utilities. Any faults discovered should be reported in writing with copies to all concerned. The architect initiates the correction process and should be informed of all faults. The owner, whose money is paying for the building, should demand complete execution of the contract before accepting and paying for the structure.

The owner-architect relationship is a long and close one. The architect is familiar with problems which are quite likely to be new to the owner. The owner should make every effort to understand these problems. Lack of faith in the architect, poor relations or communications with him, failure to provide him with needed information, are some of the things which may have an adverse effect on the whole project. At the same time, the owner must understand his own problems, transmit them to the architect and see that they are solved. Once the structure is complete it is the owner and not the architect, contractors or clerk-of-the-works who must live with it, and it is his final responsibility to see that the building is the right one.

EQUIPMENT

Equipping the union building is quite likely to involve a variety of items as diverse as cooking ranges and motion-picture screens, sporting goods cases and circular saws, bowling pins and record libraries. Some of the items are custom-made and require months between the placement of orders and delivery date. This means that the planning of equipment must be an integral part of the building planning process. If the architect on a single contract basis is responsible for the building and all interior decorations, furniture, kitchen, store, theatre, games and similar equipment, he can integrate all the planning. Undoubtedly he utilizes specialists in at least some of the areas but he retains responsibility for their work. Specifications are written to assure proper performance, reputable business houses dealt with and trained supervision provided. Such an arrangement does add to the total cost, as his fee is added to the cost of items such as desks, folding chairs, tables and other articles which the university may consider itself quite capable of purchasing. If, in the interests of economy, the university intends to do any of its own purchasing, it should be cognizant of the coordination problems implicit therein, not only in timing of deliveries and installations, but in actual physical fitting of equipment. Regardless of how the purchasing is done, both the architect and the owner should be informed constantly of all transactions and developments.

Specifications

Because the union building is an institutional one which seeks to create a more or less domestic environment (the "union atmosphere" of the first chapter), much of its equipment may be custom-made. Fabrics may be dyed or printed to meet the demands of the color schemes. Counters, dining booths, memorial or donor tablets, bulletin boards, games equipment such as table tennis tables, work benches or storage receptacles are some of many items which often must be made to order. Lounge furniture strong enough for institutional use without the institutional look has been made for several unions such as the Iowa Memorial or Ohio State Unions. Experts on the planning committee, or otherwise available, such as purchasing agents, home economics professors on furniture, quantity food specialists on kitchens, business professors on offices, as well as the various consultants being used, should assist in drawing up the specifications for all furnishings and equipment if they are to be purchased separate from the building proper. If they are included in the original contract, their specifications should be prepared and checked by qualified persons as carefully as those of the building itself. Colors and finishes selected should be in accordance with the prescribed color scheme, with samples submitted wherever necessary. Weights, gauges, sizes, capacities, construction methods, performance standards, brand names and numbers, dimensions, and location of hinges are among the many items which may be used to define as rigidly as possible the equipment being purchased. Deviations from or substitution for such specifications should not be permitted without due consideration, and then only in writing.

Bids

Following the promulgation of equipment specifications, the gathering of prices takes place. If a part of the building contract, the final bids contain allotments for furniture and equipment. If separate from the building contract, the invitations to bid should utilize the existing university channels to assure proper form, obtaining of bonds and binding contracts. Any purchases of equipment, such as that for kitchens or shops, which require installation and service connections, should be most specific as to whether this is to be included in the contract price.

Delivery

Delivery dates should be definite and approved by the architect who must have conduits, plumbing and utility lines, floor and wall spaces, and surfaces ready. The place of delivery should also be specified to eliminate time loss to (and possible charges from) the carriers as well as possible return or misplacement of equipment. Any delays in building progress may necessitate similar delays in deliveries. Early arrival of equipment may result in its being carelessly moved about by disinterested workmen to whom it represents only an obstacle, in the collection of inordinate amounts of construction dirt, in damage by extra handling, vandalism or the elements, in its being pilfered,or in the loss of its guarantee. It may become necessary to obtain extra storage space to protect items arriving before the building is ready to receive them.

Late arrival is at least as inefficient as early delivery. It may result in a delay in opening the building,and afford contractors an excuse for their own derelictions. It may require duplication of effort on the part of floor men, tilers, electricians, painters or others. It makes rectifying errors in purchasing or executing the purchases difficult. It may result in subcontractors leaving the project for another with no definite time set for their return. Because of off-schedule arrival, installation contractors may not be in a position to work immediately upon arrival, with resultant further delays.

Despite the most careful coordination of construction and delivery of equipment, some discrepancies are bound to result. This may present a choice of leaving the equipment uncrated and uninspected until the time arrives for its eventual placement,or of opening the shipping package for inspection with possible subsequent damage occurring thereby. If time is drawing short (an almost inevitable situation) the contractor may be prevailed upon to clear or finish one handy area for temporary storage. Should equipping and/or furnishing be included in the original contract,much of this coordination problem does not concern the owners directly. Nevertheless, anything which may affect their future equipment is of concern.

Installation

In some instances installation means little more than unrolling a rug or placing a desk, but in such areas as the kitchens or soda fountain, billiards room, theatre or hobby shop, professional installation is required. The cost of such installation may or may not be included customarily with such equipment. The word installation may mean proper placement, as in the units of a soda fountain, but not service connections, such as connecting of electrical, plumbing, compressor and gas lines. Specific information concerning all phases of installation should be given in whatever contract is pertinent to the purchase of the equipment.

If equipment installation is not a part of the building contract,the installer should visit the scene to make certain his equipment fits properly, as some changes, deliberate or accidental, are quite likely to occur which cause deviations from his information. Oftentime he may have been derelict in furnishing the architect with needed information so that electric outlets or projection ports or a hundred other items may require changes in plans. The installer may need permission from the contractor to make his installation prior to completion of the contract and, unless care has been taken in advance, may cause a complete work stoppage because he employs nonunion or conflicting union labor.

Naturally, if the vendor (or the contractor) is responsible for all installation as well as purchasing of the equipment,it is easier to place responsibility for errors of omission or commission. Some vendors attempt to have the installation work done by subcontractors already working on the building and, wherever possible, such a course is recommended to owners who may be responsible for installing the equipment. Some universities may wish to have their own maintenance forces make the installations, in which case it may be necessary to wait until the contractor has completed his work or even until the building has been accepted. Obviously, the arrival and installation of equipment should be thought out in advance and included in the original agreements. The advantages of one contract covering all phases of the building, with the possible exception of furniture and office equipment, seem self-evident, yet budget restrictions may be such that this cannot be done.

Receipt

Accepting equipment involves much more than initialing of the shipping invoice. Shipments should be checked against the purchase order or specifications, and discrepancies noted. (This implies duplicates available at the building site.) Inspection should be made for obvious defects, and immediate reports rendered wherever indicated. Any operating or maintenance instructions, guarantees, specifications, shipping invoices or other literature which may accompany the equipment should be filed. Final acceptance should not be made of operating equipment until it actually has been placed in use, and all such equipment should be closely observed to permit the filing of adjustment claims prior to expiration of guarantees in the event of improper operation. Here again a blanket contract removes much of the owner's responsibility for individual pieces of equipment. Time should be allowed before opening for "dry runs" on all operating equipment to permit proper testing and instruction.

Whether equipment is to be furnished in the building contract or by the owner, its absorption into the building should be accompanied by notations in the inventory and maintenance files. Much of the preliminary work can be done from the original specifications and purchase orders, with confirming entries made upon receipt or installation. Thus, if the university's regular forms or the union's own forms are available as soon as the final specifications are drawn up, most of the pertinent information can be entered before construction is started. Naturally, if the university has its own procedures for completing such forms, they should be followed. An early start on completing many of these forms results in one less task to be completed during the pressure-filled days which surround the opening. It will be noted that such a form contains pertinent information concerning the item involved, its vendor and manufacturer, date of purchase, original and replacement cost, number purchased, depreciation and maintenance schedules, department concerned, location and space for annual inventory checks. Such a form, properly used, assists in controlling equipment and in maintaining a depreciation, replacement and budget schedule.

An equipment maintenance schedule lists the specifications of the equipment and its manufacturer's suggestions for maintenance. The scores of electric motors in refrigeration, air conditioning, ventilating, heating, cleaning and other systems demand periodic inspection and oiling. Filters, pumps, grease traps, light bulbs, amplifiers, projectors and other items should be incorporated into a regular inspection and maintenance program at the outset.

INITIATION OF OPERATION

It is only natural that the erection of a building as unique as the union's plant should focus attention on the physical aspects of the union, particularly if the union concept is new to the campus. While this volume is devoted to the planning of a union building, it should never lose sight of the fact that these buildings are intended to serve specific purposes and that rather definite methods exist for the fulfilment of these purposes. As "an informal educational medium for individual and group self-discovery and expression through a broad program of social and cultural recreation," the union must be prepared to operate from the moment of dedication. The services of the building, such as the food areas or bookstore, are quite likely to receive most of the attention, if for no other reason than the investment and revenue they represent. Wrestling with the various problems which a new plant presents with insistent urgency is quite likely to involve the time and thinking of all staff members, if so permitted, and in this connection it should be pointed out that malfunctioning of the plant is quite likely to result in failure of the whole union operation. Nevertheless, much can and should be done to create a dynamic organization which initiates a program of significance, starting with the opening event. Participation by all, with student planned activities leading the way, can better demonstrate the union's intention to make itself an exercise in self-government than can reams of publicity and pages of constitutions.

Preparing for operation is actually part of the planning procedures for the union, and if the concept of the union as an organization rather than a mere building is maintained throughout, the demands for planning the operation are easily understood. A program must be ready to encourage varied participation. Prices must be established and an accounting system set up. A determination of staff requirements and the recruitment of personnel must be undertaken. Operating supplies must be ordered, final cleaning completed. House rules and policies should be formulated. Work schedules must be arranged and a budget promulgated.

The organization of the union and initiation of its program might well develop from the original planning committee, providing this committee was accepted originally as representative of the various campus interests. The Association of College Unions can furnish considerable information on methods of organizing a union and on the various phases of its program. The University of Wisconsin Union makes available for rental a forty-minute color film depicting its activities and its system of operating through committees, and this film is nearly ideal for presenting the union concept to large and small groups. The place of the union in relation to religious groups, student government, fraternities or other local organizations should be well thought out in an attempt to ensure against the union being considered as a pawn of the administration, a hangout for freshmen, a gathering place for independents or a club for a selected few.

The importance of continued support of the union idea should not be underestimated. The opening throes encountered by the Oklahoma Union serve as evidence. Approximately a month prior to the opening of the building a group of students protested the collection of the union fee despite its previous approval by student vote. The existence of a heavy loss after one month of operation added to the furor, and less than two months after opening the union manager resigned. In another week a suit was filed by students to prevent the collection of the union fee, and later that same month the manager of the billiard room was arrested on a charge of operating pool tables without a city license. The very next day the county assessor announced his intention to collect ad valorem taxes on the building. Such an extreme case certainly is not typical of the fate of unions, but it does illustrate what can happen when the union concept is not understood by the campus or the community. It should perhaps be pointed out that student generations change completely every four years, and that continuing education may be necessary during all phases of the union project -- fund raising, planning and construction.

Early Direction

The building which is being planned is tailored to fit a program, and the determination of this program should be made early. The architectural adviser of the Association of College Unions points out that

> failures to approach the problem (of a new building) properly, as a rule, do not come from a lack of understanding of the proper approach on the part of a union director. The most usual difficulty encountered in the early stages is the complete lack of understanding of the problem on the part of the administrative officers of the institution.

He suggests that a union director be appointed early, that a program for the union be written, and that experienced architectural and union consultants be retained before actual physical plant planning begins.[1] The place of the union in the campus administrative scheme of things also should be well thought out and approved before contracts for the building are let.

Noffke urges that a director be appointed full time when it is decided that a program is to be written for an architect's use, and goes on to illustrate how in one situation the early appointment of a competent director might have resulted in a savings in building operation of over four hundred dollars a month. In addition he lists such advantages as orientation of the director to the campus, formation of good campus attitudes about the union, and proper administration of both planning and operating procedures as resulting from early hiring of a director.[2] There is no question but that a capable union director, hired at least two years in advance of the opening date, can gain invaluable experience and knowledge of the campus and its programs. With both an organization and a building to receive his attention, there should be little fear that such a director will not earn his salary.

In addition to hiring the director early, it is desirable to have other key members on hand well in advance of opening day. The food director, social director and the administrative assistant should be available at least six months before opening, and the building engineer should be around as much as possible during the construction phase. The plea for early hiring, particularly of the director and food manager, recurs throughout union bulletins and proceedings.

Staff

The pressures referred to in the first chapter which are exerted in behalf of financial rather than personnel considerations should certainly be avoided when staff recruitment is begun. Proper fiscal operation is at least as necessary in the union as it is everywhere else on the campus, but if education is the union's purpose it is only natural to expect educators to administer it. The employment service of the Association of College Unions is of great assistance to institutions assembling union staffs and can forward names of persons qualified to embrace both the educational and business aspects of the union responsibility. Full-time business managers and department heads are necessary in most unions of any size, but the union director certainly should be an educator with enough knowledge of business operations to permit him to supervise adequately the various commercial operations.

Before opening the building it is very important to have the necessary staff not only hired, but actually working. Colleges often err in the staffing of their union building by failing to recognize that this building and its program undoubtedly will operate seven days a week, including holidays and, perhaps, vacation periods, from early morning until late at night. Each week supervision will be required in a number of union departments over a period of what amounts to three normal college work weeks. The common failure adequately to staff the union to meet these hours results either in the building not achieving its full potential as an educational and recreational force, or in the eventual fatigue and resultant inefficiency of the staff that is provided. It should be remembered that as the offices on campus close, the union's heaviest load is usually just beginning.

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[1] Michael M. Hare, "Planning New or Expanded Union Buildings," College Unions - 1946. Proceedings of the Twenty-third Annual Convention of the Association of College Unions, (1946), pp. 12-18.

[2] Frank Noffke, "Hiring the Director," College Unions - 1950, pp. 107, 108.

In addition to the number of employees needed to operate the union program, the university must consider the variety of talents required. Many of the services offered by the plant are continuing ones and require the presence of such specialists as food and game room supervisors, bookstore clerks, receptionists and janitors. Also, program specialists such as hobby instructors, social directors or dramatic leaders must be available to carry out their responsibilities. Larger unions may be able to divide their staffs into business and program departments; smaller ones are likely to find staff members working in both areas. Nevertheless, small unions with complete facilities must have persons qualified in the necessary specialties if they are to fulfill the various functions expected of them. In the final analysis the number of staff members needed by a union will be determined by what is attempted, rather than by the size of the building or the college.

Gathering a staff is followed by training it, and considerable work must go into the preparation of preliminary employee manuals and a training program. Job specifications must be prepared. Some existing specifications such as those in use in cafeterias, kitchens and offices may permit of application to the union. Others, unique to the union, may be written from the Association of College Union's publication, *Standards of Training, Experience, and Compensation in College Union Work*. An examination of the United States Department of Labor's *Job Description for Hotels and Restaurants* may offer assistance.

Professional staff members should be assigned to work with the students and others long before the building opens to have a varied program ready for the opening day and opening year. Much of the framework for future union programs can be constructed while the building itself is being built. The first few weeks of operation, perhaps unfortunately, can do much to establish union attitudes and habits for years to come. Naturally, there is some difficulty in attracting students to a program which exists only in the future, but, since nothing succeeds like success, proper demonstrations of what can be accomplished for students by students in the way of dances, art exhibits, games tourneys or poetry reading early in the union's existence assist in recruiting members for the various committees.

Maintenance

It is quite possible that a campus with no previous union experience, despite precautions, may be unprepared for the tremendous maintenance problem, the long hours and continued wear of a successful union building. The union building housekeeping requirements differ greatly from those of the classroom and laboratory, and a strong argument can be made in favor of unions operating their own housekeeping programs. Using the best available standards, whether they be the university's, commercial ones or those obtained elsewhere, a staff and schedule should be established which permits the maintenance of the "union atmosphere." A maintenance schedule for the building should be prepared along with the one for the equipment. It provides specifically for the execution of the many details which enter into meticulous housekeeping. Arrangements should be made for checking the accuracy of this schedule soon after occupancy, as well as periodically thereafter. At least one new union has utilized the services of an engineering class in methods analysis to study such areas as the dish room, main desk and serving room.

Supplies

All kinds of supplies are needed to initiate operation. The receiving and storage facilities should be ready well in advance of expected arrival dates. The business operation must be complete by now so that purchasing, receiving, inventorying, accounting, reimbursing and related functions may be performed. Staff members are needed to handle these supplies. Security may be a problem if workmen are still working on the building, and means of locking all storage spaces which are put into use should be provided.

Policies

Operating policies and the forms necessary for their execution should be ready, although they certainly should permit of change as experience indicates such desirability. A master schedule, room reservation forms, receipt forms and departmental report forms are a few of the items which should be duplicated (particularly if change is contemplated) or printed.

Union directors who have opened new buildings seem to be in unanimous agreement that, despite the most careful planning, myriad delays and difficulties present themselves as opening day arrives. "Dry runs" are most desirable. Establishment of a definite opening date and opening of only parts of the building while work proceeds in unfinished portions are to be avoided. Opening during the summer with a fall dedication is felt to be an ideal arrangement, since it offers an opportunity to work out difficulties before the start of full-scale operation. Other suggestions which might assist union builders in preparing to operate the new building include the early definition of the building's objectives and its operating philosophy, preparation of a budget at least a year and a half in advance of opening,and the establishment of purchasing channels.

Some interesting and informative summaries exist to indicate the kind of problems which may arise. A review of the annual Proceedings or of the Bulletin of the Association of College Unions will frequently disclose opening problems which can plague the staff of a new building.

CHAPTER V

GUIDES FOR UNION BUILDING PLANNING

COMMON PLANNING ERRORS

Warnings and complaints about errors in the planning of college union buildings tend to be repetitive enough to indicate that there are certain mistakes which should be avoided. Some of these originate from the nearly universal lack of funds which are required to construct the ideal union building. Others stem from a lack of a clear understanding of purposes of a union. Still others are products of ineptness or misconceptions of the final demands which are to be placed on the building. An examination of three listings of errors common to many union buildings illustrates the sort of results to be expected from an incomplete planning program. Summarized from the Association of College Unions come the following comments on union building inadequacies:

> Most unions are not nearly large enough.
>
> Some facilities are not planned for flexibility in use; others are planned for impractical multiple use (a large lounge -- dance hall). Utility, efficiency and convenience may be constricted by insistence on architectural style or symmetry.
>
> The union is considered as a place to eat and meet.
>
> Non-union facilities (bookstore, faculty space, swimming pool, beauty shop, etc.) are often mistakenly included.
>
> Too few meeting rooms are included.
>
> Too few small meeting rooms are included.
>
> The amount of storage space available is often inadequate.[1]

The 1947 survey of shortcomings in union buildings lists the following:

The union directors are not consulted in the original planning.
Food service facilities are not grouped together.
Food service spaces are not large enough.
Food service equipment is not adequate.
Dining areas are not air-conditioned or soundproofed.
Not enough private dining rooms are included.
Dining spaces are not flexible enough.
Buildings are not large enough for the growth of program or campus.
Careful thought is not given to flow of people and materials.
Lighting is often inadequate.
Both service and passenger elevators are needed.
Furnishings and equipment are not durable.
Furnishings and equipment are not easily cleaned.
Not enough employee locker and wash room space is included.

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[1] Porter Butts et al, Planning and Operating College Union Buildings. (Ithaca, N. Y.: The Association of College Unions, 1954), pp. 10-12.

Not enough employee dining and recreational space (in larger unions) is included.
Buildings are not planned for partial operation (dance, bowling, guest rooms).
Storage space is insufficient.
Storage for tables and chairs near ballrooms is not sufficient.
Coat room arrangements are not satisfactory.
Game rooms are not large enough and not expansible.
Game rooms are too near food service and quiet areas.
Game rooms are not soundproofed.
Bowling alleys are inadequate.
More meeting rooms, particularly small ones, are needed.
Lounge spaces are inadequate.
Administrative spaces are too near noisy areas.
Administrative spaces are inadequate.
Ballrooms are not flexible enough.
Arts and crafts shops are excluded.
Insufficient number of rest rooms is included.[1]

Porter Butts, planning consultant of the Association of College Unions, cautions against:

Lack of creative and cultural facilities (workshops, music rooms, theatre, motion picture facilities, art galleries, darkrooms).
Lack of recognition of universal coke and date habits, resulting in too large, formal lounges and too little fountain room lounging center, the heart of the modern union.
Lack of small, theatre-type rooms with projection equipment and stage.
Lack of conference rooms.
Inclusion of hotel, bookstore and other "non-union" facilities which make the campus think it has a union.
Grandiose, monumental lobbies.
Acceptance of "white elephant" gifts which prevent flexible use or change.
Conflicting dual purpose uses.
Lack of music listening rooms.
Art exhibition space in out of the way locations.
Lack of work spaces (storage, offices, repair shops, etc.).
Lack of replaceable standard equipment and parts.
Lack of overages of original building materials.
Lack of conduits for utilities (radio, telephone, 220 lines, public address system).
Failure to consult student groups about their needs and wishes during planning.[2]

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[1] Thomas McGoey, "Main Short Comings of Union Buildings," College Unions—1947. Report of Proceedings of the Twenty-fourth Annual Convention of the Association of College Unions (1947), pp. 21-25.

[2] Porter Butts, "Before You Build a Student Union," College Unions - 1946. Report of Proceedings of the Twenty-third Annual Convention of the Association of College Unions (1946), pp. 19, 20.

SUGGESTED CHECK LIST FOR UNION BUILDING PLANNERS

- Concept
  - Establishment of need
  - Determination of purpose
    - Written statement
    - Union board idea
    - Role of each group
      - Students
      - Faculty
      - Staff
      - Alumni
      - Community
  - Understanding of union's place in educational plan
  - Early development of methods for fulfilling purposes (program)
    - Determination of policies
    - Recognition of union's uniqueness

- Approach
  - Fund raising commitments
    - No restrictions affecting planning
    - Amortization not impairing program
  - Creation of union atmosphere
    - Policies
    - Exterior
    - Interior
  - Completeness
    - Meet local needs
    - Fulfill union purposes
  - Philosophy
    - Educators as planners
    - Educator as director
    - Place in organization chart

- Organizational Planning
  - Committee
    - Orientation
    - Surveys
    - Representation
      - Student
      - Faculty
      - Administration
      - Alumni
      - Trustees
      - Others
  - Sub-committees
    - Special areas
      - Food
      - Bookstore
      - Hotel
      - Theatre
      - Music
      - Art
      - Publications
    - Special Problems
      - Parking and traffic
      - Integration with other organizations
      - Budget
    - Resource persons
      - College engineer
      - College architect
      - Residence director
      - Controller
      - Food director
      - Activities director
      - Student government
      - Future union director
      - Personnel deans
      - Buildings and grounds director
      - Purchasing agent
      - Bookstore manager
      - Dramatics director
      - Music
      - Police chief
    - Faculty advisors
      - Publications
      - Hobby groups
      - Student government
      - Camera club
      - Outing club
    - Instructional staff
      - Engineering
      - Music
      - Art
      - Architecture
      - Home economics
      - Accounting
      - Merchandising
    - Visitation to other union buildings
    - Survey of competing facilities
    - Inclusion of existing facilities
    - Continuing public relations plan
    - Consultants
      - Union
      - Food
      - Hotel
      - Architectural
      - Theatre
      - Bookstore

  - Place in college development plan
  - Analysis of campus recreation pattern
  - Analysis of campus recreation facilities
  - Analysis of campus recreation needs
  - Determination of campus union recreation needs
  - Determination of campus union services
  - Projected program
  - Projected budget
  - Projected enrollment
    - Men and women
    - Residents and commuters
  - Present meeting schedule
  - Projected meeting schedule
  - Projected permanent offices
  - Week-end pattern
  - Setting (urban vs. rural)
  - Campus regulations
  - Dating habits
  - Summer sessions
  - Conferences and conventions
  - Available guest housing
  - Food service pattern
  - Utilities and service lines
    - Heat
    - Sewage
    - Electricity
    - Trash disposal
    - Gas
    - Telephones
    - Water

- Expansion
  - Land available
  - Provision in original plans
  - Service facilities
  - Traffic
  - Utilities and service lines
  - Stairways and corridors
  - Lighting, heating and ventilation

- Flexibility
  - Multipurpose rooms
  - Portable furniture and equipment
  - Elevators and conveyors
  - Folding walls
  - Large activities center
  - Possible partial operation
  - Segregation by function
  - Ventilation adequate
  - Lighting adequate
  - Heating adequate
  - Nonbearing internal walls
  - Modular walls
  - Placement of service lines
  - Continuous fenestration
  - Modular heating

- Safety
  - Approaches
  - Entrances
  - Traffic patterns
  - Elevators
  - Floors
  - Stairs and staircases
  - Lighting
  - Moving equipment
  - Hot water
  - Fire protection
  - Seating capacities
  - Swing of doors and windows
  - Sanitation
  - Noise
  - Structural strength
  - Access and exits
  - Safety devices

- Appearance
  - Permissive atmosphere
  - Attractive exterior
    - Grading
    - Landscaping
    - Sidewalks
    - Maintenance
    - Design
    - Parking
    - Service areas
    - Expansion
  - Attractive interior
    - Proportions
    - Color
    - Lighting
    - Decoration
    - Furniture
    - Equipment

- Functionality
  - Efficiency of each component
  - Appearance
  - Durability

- Efficiency and economy
  - In terms of education
  - In terms of finance
  - In terms of service
  - Segregation by function
  - Distribution of service units

- Intrabuilding transportation
- Traffic patterns
- Maintenance
- Construction

Administrative, Service and Maintenance
  Areas

- Offices
  - Space
  - Work stations
  - Storage
  - Movable partitions
  - Large work table
  - Arrangement
  - Conference arrangement
  - Separate accesses
  - Over-all lighting
  - Aisle space
  - Fireproof storage
  - Accident proof
  - Color
  - Growth
  - Centralization vs. decentralization
  - Supervision
  - Privacy
  - Communication
  - Secretarial bay
  - Equipment
- Coat rooms
  - Distribution
  - Combination self-service and checking
  - Portable racks
  - Space allowance
- Information center
  - Predetermination of uses
  - Conjunction with other areas
  - Extent of services
  - Location
  - Equipment to fit needs
    - Racks and drawers
    - Cash register
    - Public-address system
  - Adjacent lounge
- Non-union offices
  - Careful consideration of inclusion
- Ticket booth
  - Determination of sales policy
  - Peak load
  - Parking
  - Lines extending
  - Seating diagrams
  - Equipment
- Rest rooms
  - Strategic location
  - Nonslip and sealed floors
  - Floor drains
  - Wall-hung fixtures
  - Shelves and mirrors
  - Napkin dispensers
  - Wash basins
  - Urinals
  - Closets
  - Wash basins
  - Soap dispensers
  - Ash urns
  - Automatic flushing
  - Employees' facilities
    - Showers
    - Lockers
  - Water coolers
- Duplicating
  - Kind
  - Space requirements
  - Student use vs. office use
  - Storage
  - Addressing
- Lost and found
  - Determination of policy
  - Staffing
  - Storage
  - Safekeeping
  - Ventilation
- Bulletin boards
  - Location
  - Number
  - Material used
  - Lighting
  - Opening
  - Recessed
  - Poster frames
  - Portable boards
- Lobby
  - Size
  - Furniture
  - Nearby lounge
  - Entrance
  - Cleaning
  - Lighting
  - Information
  - Building directory
  - Coat room
- Delivery area
  - Platform
  - Access
  - Unloading space
  - Checking space

  - Scale
  - Standing storage
  - Interior transportation
  - Place in building expansion plans
- Trash and garbage rooms
  - Location near delivery
  - Platform
  - Garbage refrigerated
  - Incinerator
  - Fireproof
  - Lockable
  - Verminproof
  - Impervious floors
  - Hot water and steam
  - Can washer
  - Ventilation
  - Soundproofing
  - Fencing
  - Landscaping
  - Wide corridors
  - Platform overhang
  - Door signal
  - Ramp
- Storage
  - Kinds
  - Determination by function
  - Normal growth
  - Safeguards
  - Flexible shelving
  - Wide access
  - Fire protection
  - Unloading space
  - Safety signals
  - Cleaning
  - Floors
  - Rodentproof
  - Temperature
  - Ventilation
  - Records keeping
  - Decentralization and centralization
  - Transportation of stores
  - Level floors
  - Ramps
  - Establishment of procedures
- Janitors' closets
  - Establishment of building requirements
  - Variety of requirements
  - Equipment
  - Storage
  - Ventilation
  - Floors and walls
- Upholstery and maintenance shops
  - Consideration of function
  - Equipment
  - Storage
  - Work space
  - Power tools
  - Use of craft shop
- Elevators
  - Area serviced
  - Anticipated load
- Intercommunication
  - Mail box
  - Distribution
  - Intercommunication system
  - Central public-address system
  - Distribution of microphone outlets
- Western Union
  - Telephone lines
  - Equipment
- Post office

Food service areas
- Study of function
  - Existing service
  - Expected changes
  - Elements anticipated for union
  - Analysis of menus
  - Anticipated patronage
- Flow process (layout)
  - Receiving
  - Storage
  - Preparation
  - Service
  - Consumption
  - Disposal
  - Location (ground floor)
  - Supervision
  - Traffic control
  - Employee flexibility
  - Shape of kitchen
- Space allocations
  - Early study
  - Operating procedures
  - Local conditions
- Safety
  - Sanitation
  - Protection of employees
  - Protection of patrons
  - Equipment standards
  - Inspection during installation
  - Fire alarm
  - Fire protection
  - Lighting
  - Floors
  - Sound control
  - Cleanliness

- Appearance
- Expansibility
  - Fixed equipment
- Flexibility
- Organizational planning
  - Understanding of overall purpose
  - Integration into union administration
- Food storage
  - Dry
  - Root
  - Refrigerated
  - Cereal
  - Day
  - Garbage and trash
  - Frozen
- Preparation
  - Meat cutting
  - Vegetable preparation
  - Cooking
    - Expansion arrangements
  - Baker's unit
  - Salad unit
  - Ice cream unit
- Service
  - Cafeteria counter
  - Banquet service
  - Soda fountain
  - Coffee shop
  - Serving pantry
  - Dining rooms
  - Waitress stations
  - Take-out
- Dining rooms
  - Furnishings
  - Equipment
  - Decoration
  - Atmosphere
  - Flooring
  - Flexibility
  - Refreshment
  - Coffee shop
  - Cafeteria
  - Table service
  - Banquet
  - Private
  - Coat rooms
  - Rest rooms
  - Ventilation
  - Sight lines
  - Table and chair storage
  - Layout
  - Shape
  - Public-address system
  - Lighting
  - Crowd handling
  - Soundproofing
  - Maintenance
  - Separate access
- Janitors' closets
- Linen storage
- Employees' facilities
  - Lockers
  - Showers
  - Rest rooms
  - Cots
  - Lounge
  - Lunchroom
- Offices
  - Supervision
  - Communication
  - Ventilation
  - Filing
- Equipment
  - Expert consultation

Quiet Areas
- Meeting rooms
  - Number
  - Size
  - Flexibility
  - Chair storage
  - Projection booth
  - Fire protection
  - Sight lines
  - Soundproofing
  - Appearance
- Lounges
  - Determination of function
  - Variety
  - Size
  - Public-address system
  - Functional furniture
  - Art displays
  - Lighting
  - Safety
  - Appearance
  - Refreshment service
  - Auxiliary storage
  - Supervisory facilities
- Cultural Center
  - Music
    - Equipment
    - Booths
    - Lounge
    - Soundproofing
    - Appearance
    - Refreshment service
    - Acoustics
    - Movable furniture

    - Reading room
      - Growth
      - Lighting
      - Refreshment service
      - Soundproofing
      - Appearance
      - Proper storage
    - Art display room
      - Multiple use
      - Easy display
      - Lighting
      - Appearance
      - Storage
      - Displays elsewhere
    - Central control
      - Location
  - Guest rooms
    - Dormitory and hotel service
    - Consultant
    - Integration with building
    - Separation from building
    - Special services required
    - Safety
    - Appearance
    - Control
  - Student activities area
    - Size
    - Location
    - Equipment
    - Lighting
    - Closing hours
  - Non-union student facilities
    - Publications darkrooms
    - Radio station
      - Transmission lines
      - Television future
      - Record storage
      - Telephone lines
      - Auxiliary studios
      - Conduits
      - Soundproofing
      - Acoustics
      - Ventilation
      - Traffic control
      - Equipment
      - Layout
    - Commuters' area
      - Lockers
      - Reclining rooms

- Theatre
  - Intended uses
    - Anticipated policies
  - Auditorium
    - Seating capacity
    - Flexibility
    - Shape
    - Seating
      - Sight lines
      - Unobscured vision
      - Safety
      - Codes
      - Comfort
      - Access
    - Safety
      - Exits
      - Lighting
      - Floors
    - Appearance
    - Acoustics
    - Ventilation
  - Stage
    - Size
      - Proscenium
      - Whole stage
      - Traps
      - Forestage
      - Elevated pit
      - Height
    - Access from auditorium
    - Access from backstage
    - Organ
    - Stage house
      - Size
      - Gridiron
      - Skylight
      - Lighting
      - Heating
      - Elevators
      - Stairs
      - Counterweights
      - Screen
      - Sound box
    - Floor
      - Floor cloth
    - Curtains
      - Dual operation
      - Teasers
      - Tormentors
      - Draperies
      - Cyclorama
    - Lighting
      - Spotlights
      - Floodlights
      - Striplights
      - Footlights
      - Curtain lights

- Conduits
- Capacity
- Control board
  - Location
  - Flexibility
- Light booth
  - Location
  - Light beam
  - Storage
  - Ventilation

Dressing rooms
- Auxiliary rooms
- Permanent rooms
- Chorus rooms
- Equipment
- Soundproofing
- Safeguarding
- Make-up room
- Location

Scenery shop
- Possible combination with others
- Location
- Height
- Size
- Storage
- Well for flats
- Size of openings

Costume shop
- Location
- Equipment
- Possible combination with others

Rehearsal rooms
- Multiple use
- Use of other areas
- Music rehearsal

Projection booth
- Equipment
- Ports
- Sound system
- Safety
- Controls
  - Curtain
  - Lights
- Projection angle
- Access
- Transportation
- Codes
- Storage
- Toilets
- Rewind room
- Electrical requirements
- Unobstructed projection

Sound system
- Motion pictures
- Public address
- Controls
- Microphone station
- Paging
- Intercommunication system
  - Buzzers
  - Light signals
- Glass booths
- Radio
- Television

Lobby and foyer
- Size
- Marquee
- Traffic flow
- Location
- Ticket sales
- Ticket collection
- Coat rooms
- Rest rooms
- Drinking fountains
- Public telephones
- Display space

Ticket booths
- Queuing
- Number
- Equipment
- Box office
- Telephone

Coat rooms
- Location
- Capacity
- Flexibility

Green room
- Multiple use
- Kitchen use
- Recreation lounge

Hobby areas
- Understanding of need
- Interrelationship of areas
  - Common tools and materials
  - Interchange of interest
  - Service lines
- Central office issue room
  - Location
  - Distribution of tools and materials
  - Equipment
- Storeroom
  - Transportation of materials
  - Stock storage
  - Tool storage
  - Work in progress
  - Trash

- Central studio-lounge
  - Projected uses
  - Furnishings
  - Equipment
  - Size
  - Layout
  - Lighting
  - Entrance
  - Display
- General shop
  - Flexible equipment
  - Specialized equipment
  - Layout
  - Utility and service lines
- Power tool shop
  - Equipment
  - Safety
- Photography
  - Studio (combine with lounge ?)
  - Chemical mixing room
    - Pass-throughs
    - Chemical storage
    - Plumbing
  - Darkroom
    - Lightproof
    - Equipment
    - Plumbing
    - Storage
    - Air conditioning
  - Printing room
    - Lightproof
    - Equipment
    - Storage
    - Plumbing
  - Finishing room
    - Equipment
  - Graphic arts
    - Processes
      - Equipment
    - Storage
  - Circulating art library
    - Storage
    - Issue
    - Display
  - Safety
    - Fire hazards from waste
    - Tools
    - Lighting

Games Area
- Equipment repair
- Expansion plans
- Ventilation
- Lighting
- Appearance
- Layout
- Central control
  - Service to all areas
  - Paging system
  - Sales space
  - Storage and issue racks
  - Telephones
- Table tennis
  - Backstops
  - Lighting
  - Ventilation
  - Table construction
  - Space requirements
  - Flooring
  - Soundproofing
- Card room
  - Projected use
  - Equipment
  - Appearance
- Billiards
  - Floor space
  - Atmosphere
  - Equipment
  - Flooring
  - Walls
- Chess
  - Projected use
  - Equipment
  - Appearance
- Bowling
  - Equipment
  - Seating
  - Shoe storage or rental
  - Possible expansion
  - Soundproofing
  - Ventilation
  - Lighting
  - Pin setting
  - Pit access

Outdoor areas
- Advantages vs. liabilities
- Parking area
  - Lighting
  - Flexibility
  - Construction
  - Appearance
  - Location
  - Capacity
  - Time control
- Cement slab
  - Location
  - Construction

- Electricity service
- Conduits
- Equipment
  - Motion pictures
  - Ice skating
  - Stage
  - Dressing rooms
  - Seating
  - Storage
- Lighting
- Plumbing
- Transportation

Games
- Badminton
- Bowling
- Boccie
- Checkers
- Clock golf
- Croquet
- Curling
- Deck tennis
- Horseshoes
- Quoits
- Roque
- Shuffleboard
- Table tennis
- Lighting
- Seating
- Appearance
  - Planting
- Orientation
- Location
- Maintenance
- Surfacing

Sun decks
- Location
  - Seclusion
  - Atmosphere
- Seating
- Dressing rooms

Picnic areas
- Purpose
- Size

Interrelationships
- With each other
- With union buildings
  - Traffic
  - Issue of equipment
  - Overflow
  - Noise and lights
  - Safety
  - Separation

Miscellaneous
- Ballroom
  - Location
  - Layout
  - Equipment
  - Storage
  - Transportation
  - Flooring
  - Appearance
  - Acoustics
  - Public-address system
  - Motion pictures
  - Lighting
  - Dressing rooms
  - Stage
  - Serving pantry
  - Party decoration
  - Smoking
  - Receptions
  - Exits
  - Ventilation
  - Rest rooms
- Television
  - Policy on use
  - Local conditions
  - Conduits
  - Multiple outlets
  - Layout
  - Furniture
  - Acoustics
- Outing organization room
  - Work space
  - Storage
  - Access

Integration of areas
- Site
- Income
- Service
- Traffic
- Education
- Noise
- Function
- Delivery
- Storage
- Partial operation
- Late operation
- Control and supervision
- Transportation
- Multiple use of employees
- Multiple use of facilities and equipment
- Communication
- Entrances and exits
- Parking
- Key system

- Architectural services
  - Owner-architect relations
    - Early start
    - Understanding of architect's duties and functions
      - Conferences
      - Preliminary studies
      - Working drawings
      - Model preparation
      - Specifications
      - Final drawings
      - Engineering
      - Preparation of bids
      - Cost estimates
      - Proposals and contracts
        - Approval of contractors
      - Certificates of payment
      - Account-keeping
      - Business administration
      - Work supervision
    - Understanding of university's duties and functions
      - Written requirements
      - Site survey
      - Service information
        - Sewer
        - Water
        - Utilities
        - Tests
        - Approval of plans
        - Signing of contracts
        - Retention of clerk-of-works
  - Extent of architect's services
    - Engineering
    - Furnishings
    - Interior decoration
    - Equipment
  - Consultants
    - Architect
    - Program
    - Food
    - Theatre
    - Bookstore
    - Hotel
    - Retained by
  - Selection of architect
    - Laws
    - Existing policy
    - Competition
    - Professional reputation
    - Past work
    - License
    - A. I. A. membership
    - Resources
    - Engineers
    - Personality
  - Liaison
    - Site selection
    - Representatives of each
      - Authority defined
      - Familiarity with project
    - Determination of details
    - Coordination with other contractors
    - Authorization of payments
    - Written communications
      - Field changes
      - Corrections
  - Final acceptance

- Equipment
  - Single contract
  - Separate contracts
    - Coordination with other work
    - Deliveries
    - Installation arrangements
    - Specifications
    - Bids
    - Inspection
    - Inventory
    - Maintenance schedule

- Initiation of operation
  - Continuation of planning
    - Information program
  - Staff requirements
    - Early hiring
    - Early training
  - Union board
  - Policies and procedures
    - Business
    - Program
    - Organizational
    - Trial forms
  - Maintenance
    - Union atmosphere
  - Supplies
    - Receiving
    - Start of inventory